



# Heart Health: An Inquiry Approach

A Senior High School Physical Education Resource



September 2005  
Field Review DRAFT

GV  
341  
H43  
2005

CURR GD  
HIST

**Alberta**  
EDUCATION

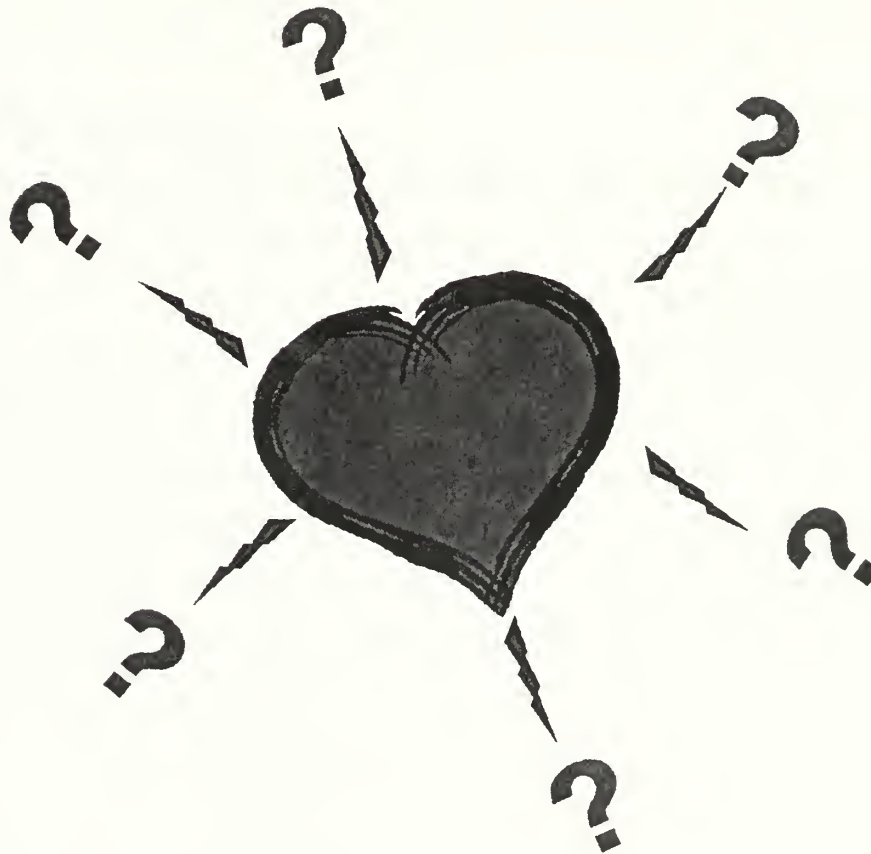


Digitized by the Internet Archive  
in 2012 with funding from  
University of Alberta Libraries

<http://archive.org/details/hearthealthinqui00albe>

# Heart Health: An Inquiry Approach

A Senior High School Physical Education Resource



September 2005  
Field Review DRAFT

GV  
341  
H43  
2005

CURR GD  
HIST

**Alberta**  
EDUCATION

Several Web sites are listed in this document. These sites are listed as a service only to identify potentially useful ideas for teaching and learning. Alberta Education is not responsible for maintaining these external sites, nor does the listing of these sites constitute or imply endorsement of their content. The responsibility to evaluate these sites rests with the user. Note: All Web site addresses were confirmed as accurate at the time of publication but are subject to change.



## Table of Contents

<b>Using this Resource</b> .....	6
♥ Inquiry-based Learning .....	8
♥ Inquiry-based Learning in Physical Education .....	9
♥ K–12 Physical Education Program of Studies .....	11
♥ Heart Zones Training .....	12
♥ Planning for Inquiry-based Learning Experiences .....	12

### Learning Opportunities

♥ <b>1 How does heart health information apply to my life?</b> .....	14–18
• Student Worksheet 1: Log Book .....	16
• Student Worksheet 2: Activity Assessment: Log Book Reflection Ideas ...	17
• Student Worksheet 3: Values Assessment: Log Book Reflection Ideas ....	18
♥ <b>2 What are my heart-rate numbers?</b> .....	19–25
• Student Worksheet 4: True Resting Heart Rate .....	22
• Student Worksheet 5: Heart Rate Homework .....	23
• Student Worksheet 6: What Are My Heart Rate Numbers? .....	24–25
♥ <b>3 What do my heart-rate numbers mean?</b> .....	26–34
• The Zones Chart™ .....	29–31
• Maximum Heart Rate Chart .....	32
• Student Worksheet 7: Heart Zones Training™ Plan .....	33–34
♥ <b>4 How does my body feel at various levels of intensity?</b> .....	35–44
• Student Worksheet 8: Perceived Intensity Scales .....	40
• Student Worksheet 9: Personal Intensity Scale .....	41
• Student Worksheet 10: Student Sample Personal Intensity Scale .....	42
• Student Worksheet 11: Activity Circuit Station: Heart Zone Identification .....	43
• Student Worksheet 12: Personal Monthly Activity Log .....	44

♥ 5	<b>Am I getting cardiovascular benefits in physical education class?</b>	45–49
•	Student Worksheet 13: Heart Rate Responses	48
•	Student Worksheet 14: Are You Getting Cardiovascular Benefits in Physical Education Class?	49
♥ 6	<b>Am I active enough each day to receive health/fitness benefits?</b>	50–56
•	Student Worksheet 15: Physical Activity Record	54
•	Student Worksheet 16: Assessment Rubric: Do It Daily	55
•	Student Worksheet 17: Goal Setting Organizer	56
♥ 7	<b>How do I create my own physical activity program?</b>	57–65
•	Student Worksheet 18: How Fit Am I?	61–62
•	Student Worksheet 19: Personal Activity Program	63
•	Student Worksheet 20: Heart Health Circuit Station	64
•	Student Worksheet 21: Fitness/Skill Challenge	65
♥ 8	<b>How can we share our understanding of heart health with the community?</b>	66–71
•	Student Worksheet 22: Heart Health Fair Draft Submission	71

## Appendices

•	Appendix A: Career and Life Management (CALM) Program of Studies	74
•	Appendix B: Questions to Guide Inquiry-based Learning	75
•	Appendix C: Pedometers	76
•	Appendix D: Strategies to Promote Cardiovascular Benefits	77
•	Appendix E: The Heart Muscle	78
•	Appendix F: Tips On Taking Your Heart Rate While Exercising	79
•	Appendix G: Heart Rate Monitor Parts and Their Functions	80–81
•	Appendix H: Heart Rate Monitor Check in-Check out system	82
•	Appendix I: Activity Circuit Station Cards	83–119
•	Appendix J: Core Body Exercises Circuit Cards	120–145
•	Appendix K: Sample Tag Games/Activities	146–150
•	Appendix L: Principles of Training	151

• Appendix M: Assessment Tests: Sample for Initial Fitness Level Assessment .....	152
• Appendix N: PAR-Q & You .....	153
• Appendix O: Career and Life Management (CALM) .....	154–163
<b>Glossary .....</b>	<b>164–165</b>
<b>Further Support Resources .....</b>	<b>166–167</b>
<b>Alberta Education Authorized Resources .....</b>	<b>168</b>

## Using This Resource

*"The Kindergarten to Grade 12 physical education program contributes to the development of life skills for the personal management of health, for the use of physical activity as a strategy for managing life challenges, and for a setting within which to practise the ability to work with others."*

(Alberta Learning, 2000.  
*Physical Education (K–12)  
Program Rationale and  
Philosophy*).

Activities in this resource are designed to facilitate student learning of the prescribed outcomes of the *K–12 Physical Education Program of Studies* and can be adapted for use in Physical Education 10–30. The aim is to enable individuals to develop the knowledge, skills and attitudes necessary to lead healthy, active lifestyles. This resource includes activities to address the outcomes of the physical education program and specifically focuses on:



General Outcome B: Benefits of Health



General Outcome D: Do it Daily...for Life.

Activities may also be adapted for use in the senior high school Career and Life Management (CALM) course. See page 11 for the physical education program of studies overview, and Appendix A, page 74 for CALM's general and specific outcomes.

### Rationale for heart health learning

Research suggests that lifestyle habits adopted during youth generally extend into adulthood. Students have the opportunity to become healthy adults and reverse current physical inactivity trends.

Current data indicates the following.

- Canadians are at high risk of developing heart disease. Eight out of 10 individuals have at least one of the following risk factors: physical inactivity, being overweight, smoking, high blood pressure and diabetes (Canadian Heart and Stroke Foundation, 2003).
- In 2000, 57 percent of Canadians aged 5–17 were not sufficiently active to meet international guidelines for optimal growth and development. For adolescents, this number grew from 64 percent in 2000 to 82 percent in 2002 (Canadian Fitness and Lifestyle Research Institute, 2004).

## Using This Resource

- Canadian youth already face risks for a number of chronic diseases due to increasingly sedentary lifestyles. Over the past two decades, the number of overweight and obese children nearly tripled in Canada. Obese youth have a greater occurrence of hypertension, high cholesterol and Type 2 diabetes (Canadian Institute for Health Information, 2004).
- In 1998, Canadians 15 years and older spent an average of 15 hours per week watching television compared to only seven hours per week in active leisure pursuits. They also spend more time playing video games than children in most other countries. In 1998, less than 37 percent of five to 18-year-olds walked to school (Canadian Institute for Health Information, 2004).

This resource offers inquiry-based learning activities, designed to be integrated in multiple ways with the senior high school physical education program and CALM program.

Physical education and CALM provide opportunities for students to be actively engaged in seeking answers to real-world questions about their own health and fitness.

Teachers may want to deliver the lessons in conjunction with activities associated with the CPR training—a mandatory component of the Grade 10 Physical Education Program beginning September 2006. In this way, students will be able to connect heart health messages to the outcomes associated with emergency care: General Outcomes B: Benefits of Health and D: Do it Daily...for Life.

The activities and lessons provided in this resource will help students understand and experience the health benefits that result from physical activity.

## Inquiry-based Learning

*"Inquiry strategies help students answer questions, solve problems and make decisions, using process, communication and participation skills."*

(Alberta Learning, 2000. *Social Studies 10–20–30 Program of Studies*.)

Inquiry-based learning is a process that involves students in their learning. Students formulate questions, investigate widely, and build new understandings, meanings and knowledge. Students may use this new knowledge to answer questions, develop solutions or support positions or points of view. This knowledge is usually presented to others and may result in some type of action.

Using an inquiry model helps students internalize a process for inquiry that is transferable to everyday situations. Thinking about inquiry as a puzzle can help students relate inquiry-based learning to their lives outside school. Students gather information from many sources and piece them together to create the whole picture or puzzle. Students will find that many of their original questions are answered through the inquiry process, however many more may arise as well.

Inquiry-based learning provides opportunities for students to:

- develop skills they will need all their lives
- learn to cope with problems that may not have clear solutions
- deal with changes and challenges to understandings
- shape their search for solutions, now and in the future.

During inquiry-based learning, the learner becomes a human laboratory in the quest for health and fitness. Physical education teachers provide the initial framework for the quest. For questions to frame this inquiry, see Appendix B, page 75.

The sign of a successful inquiry project is that students finish with more questions than when they started, so the inquiries go on and lead to further learning. Physical education provides opportunities for students to pursue personal inquiries related to health and fitness. The outcome of these inquiries instills a lifelong desire to perpetuate healthy, active lifestyles.



## Inquiry-based Learning in Physical Education

*Heart Health* is grounded in the skill of learning to listen to the language of the heart...the heart beat. *Heart Health* connects students to their heart-rate data, and offers insights into what these numbers mean using the framework of Heart Zones Training.™ Students may listen to their hearts by manually taking their pulse (carotid or radial palpation), by learning to perceive their own exertion levels or by using heart-rate monitors to collect heart-rate numbers. For more information related to Heart Zones Training,™ see <http://www.heartzones.com>.

The suggested technologies to be integrated in physical education to enhance learning of General Outcome B and D may include pedometers, heart-rate monitors, Web sites and online training journals. Educators can also capture student performance via digital and video cameras.

### **Pedometers**

See Appendix C, page 76 for more on pedometers.

There are eight learning opportunities in this resource that originate from the following questions.

- ♥ How does heart health information apply to my life?
  - Students make personal connections to active-living concepts through written logs. They demonstrate goal setting and personal progress over time.
- ♥ What are my heart-rate numbers?
  - Students determine personal heart-rate numbers in order to monitor heart health and fitness.
- ♥ What do my heart-rate numbers mean?
  - Students use a variety of activities to interpret heart-rate numbers which contribute to setting fitness and performance goals.
- ♥ How does my body feel at various levels of intensity?
  - Students describe their bodies' responses during times of exertion, connecting them to heart-rate data in order to better gauge the health, fitness and performance benefits of physical activity.
- ♥ Am I getting cardiovascular benefits in physical education class?
  - Students suggest and implement strategies to assure cardiovascular benefits are achieved in physical education class.
- ♥ Am I active enough each day to receive health/fitness benefits?
  - Students assess the frequency and intensity of current physical activity profiles to determine if cardiovascular benefits are provided.

## Inquiry-based Learning in Physical Education

- ♥ How do I create my own physical activity program?
  - Students evaluate personal fitness levels to better understand and maintain all components of fitness as part of active lifestyles.
- ♥ How can we share our understanding of heart health with the community?
  - Students share knowledge of personal lifestyle practices to make a societal change in health behaviours.

The learning opportunities in this resource provide inquiry-based activities that can be used in a variety of ways to increase student knowledge about healthy hearts.

Each learning opportunity contains:

- Physical education learning outcomes—links to Physical Education 10 outcomes, although all activities can be modified to reach similar outcomes in Physical Education 20 or 30
- Learning activity—an overview of activity expectations
- Key understanding—a statement of the concept addressed through the activity
- Background information—information that supports the learning activity
- Equipment/materials—equipment needed for the activities, as well as related worksheets and handout materials
- Procedures—the steps to follow to achieve the stated outcome
- Heart healthy tips—suggestions on how to improve effectiveness of the learning activity
- Student inquiries—samples of student questions that may arise as a result of the learning activity.



## K-12 Physical Education Program of Studies

# K-12 physical education program of studies

Alberta  
LEARNING  
2000

The aim of the Kindergarten to Grade 12 Physical Education program is to enable individuals to develop the knowledge, skills and attitudes necessary to lead an active, healthy lifestyle.



Students will acquire skills through a variety of developmentally appropriate movement activities: dance, games, types of gymnastics, individual activities and activities in an alternative environment; e.g., aquatics and outdoor pursuits.

- ✓ Basic Skills, Locomotor; Nonlocomotor; Manipulative.
- ✓ Application of Basic Skills in an Alternative Environment, Dance, Games, Types of Gymnastics, and Individual Activities.

General outcomes  
B, C and D are interrelated and  
interdependent and are achieved through  
involvement in movement activities  
identified in General  
Outcome A.



Students will understand, experience and appreciate the health benefits that result from physical activity.

- ✓ Functional Fitness
- ✓ Body Image
- ✓ Well-being



Students will interact positively with others.

- ✓ Communication
- ✓ Fair Play
- ✓ Leadership
- ✓ Teamwork



Students will assume responsibility to lead an active way of life.

- ✓ Effort
- ✓ Safety
- ✓ Goal Setting/Personal Challenge
- ✓ Active Living in the Community

### Resources available to support implementation:

- Physical Education Online  
English [www.education.gov.ab.ca/physicaleducationonline](http://www.education.gov.ab.ca/physicaleducationonline)  
French [www.education.gov.ab.ca/educationphysiqueenligne](http://www.education.gov.ab.ca/educationphysiqueenligne)

- Resources @ [www.education.gov.ab.ca/k\\_12/curriculum/bysubject/physed](http://www.education.gov.ab.ca/k_12/curriculum/bysubject/physed)
  - Physical Education Kindergarten to Grade 12 Guide to Implementation  
English LRC Product #425597, French LRC Product #461335,  
[www.lrc.education.gov.ab.ca](http://www.lrc.education.gov.ab.ca)
  - Administrator's Overview, K-12 Physical Education
  - Physical Education Resource List and Annotated Bibliography
  - Daily Physical Activity Initiative in Alberta Schools, Discussion Paper
  - Daily Physical Activity (DPA) School Handbook

The learning opportunities in this resource connect to the K-12 physical education program. Achievable outcomes are identified by the icons above for each learning opportunity.

## Heart Zones Training™

Heart Zones Training™<sup>1</sup> is a methodology used for calculating and using heart-rate data. Heart Zones™ involves:

- an individualized, personalized approach to health and fitness training
- multiple zones that provide multiple benefits
- a wellness continuum from health to fitness to performance.

To calculate heart-rate numbers for each of the five training zones, students must first determine their maximum heart rates—the highest number the heart can contract in one minute. See Learning Opportunity 3, pages 26–34, for more on maximum heart rates.

## Planning for Inquiry-based Learning Experiences

Time spent being physically active during physical education classes should be maximized in order to provide optimal time for heart-healthy physical challenges. This requires well-planned classroom management strategies.

Teachers may ask:

- how can my physical education classes be organized to increase the health/fitness benefits to my students
- how can I integrate activities that help students inquire into and challenge their personal heart health and fitness?

For strategies to promote cardiovascular benefits in physical education classes, see Appendix D, page 77.

Students can become part of a solutions-orientated team approach in physical education. Communicate the desired learning outcome and encourage students to share their ideas and solutions.

---

1. Edwards, Sally. 1993. *Heart Rate Monitor Book*. Oy, Finland: Polar Electro.

In a solutions-oriented classroom, students are actively engaged in exploring inquiries related to their own heart health. Use of physical education log books allows students to compile information and data to assist student learning. It is reasonable to assign activity time beyond the class as well as small investigations that involve links to the home and community.

**NOTE:** Some inquiries may take several classes to complete.

## ♥1—How does heart health information apply to my life?

### Physical Education Learning Outcomes



#### **Benefits Health:**

Functional Fitness B  
(10–30)–2



#### **Do It Daily...For Life:**

Effort D (10–30)–1

Active Living In the  
Community D (10–30)–9

### Learning Activity

Students gather data and record findings related to their heart health. There are a variety of written logs that can be incorporated into physical education. Logs provide students with a record of their knowledge, skills and attitudes in relation to the outcomes of the physical education program. Students make personal connections to active living concepts and record personal experiences. They also learn goal setting techniques and demonstrate progress over time.

### Key Understanding

Learning to analyze and reflect upon daily routines and how physical activity contributes to health and fitness allows students to be engaged in the learning process. These reflections help students make healthy lifestyle choices as they become adult members of the community.

### Background Information

Allowing students the opportunity to reflect upon their experiences, skills, feelings and participation helps them think about the benefits of being active on a daily basis. Student feedback also helps teachers evaluate different teaching strategies.

### Equipment/Materials

- Student Worksheet 1: Log Book, page 16
- Student Worksheet 2: Activity Assessment: Log Book Reflection Ideas, page 17
- Student Worksheet 3: Values Assessment: Log Book Reflection Ideas, page 18
- Duo tang and lined paper
- Pencils/pens

### Procedures

#### 1. Log Book Assignment

Have students use log books on a daily, weekly or unit-based time frame. Copy and distribute Student Worksheet 1: Log Book, page 16, for sample entry starters for a weekly response.

Students can use their log books to record the following information.

- Record personal physical activity levels outside class, e.g., at home, in a fitness centre, with family or friends.
- Describe how they feel when participating in physical activity during physical education class or at home.

## ♥1—How does heart health information apply to my life?

- Describe situations where they encourage other classmates while participating in physical activity. What impact did the support have?
  - Track and record their steps on a daily basis, using pedometers. See Appendix C, page 76 for details on pedometer use.
2. Copy and distribute Student Worksheet 2: Activity Assessment, page 17, and Student Worksheet 3: Values Assessment, page 18, to encourage students to reflect on their feelings and experiences.

### Heart Healthy Tips

- Encourage students to be active every day, progressing toward 60 minutes of activity most days of the week. See Canada's *Guidelines for Health Physical Activity* provided by the Health Agency of Canada at <http://www.paguide.com>.
- Create a bulletin board that promotes both school and community physical activity opportunities. Use the bulletin board to announce upcoming activities in physical education class.
- Encourage students to volunteer at community events that promote physical activity, such as a family day run or swim meet.
- Role-model a healthy active lifestyle.

### Student Inquiries

The sample questions below will help lead students to new inquiries.

- When I am finished my high school physical education program how will I continue a fitness program?
- How do I continue a lifestyle that values active living and healthy lifestyle choices?
- What should I expect when I no longer have a regular fitness routine?
- Is joining a gym the best way to maintain my fitness level?
- Do I enjoy physical activity?
- What can I do to help my family members take that first step to becoming more active?
- Is it too expensive to participate in organized physical activity outside of school? What else can I do?
- What opportunities are there for physical activity close to my home?

## LOG BOOK

1. Consider the following daily entries.

- Generally comment about the class activity.
- What were the positive aspects?
- What aspects could be changed?
- How do you feel about your activity level and heart health?

2. Complete sentence stems like the following.

- Today we did.....and it increased my ....., e.g., strength, cardiovascular fitness.
- I enjoyed.....
- I'd like to do more of.....
- I discovered that.....
- Next time I would.....
- I have now set a goal to.....
- Now that I can.....I will be able to.....
- I found.....worthwhile.
- I found it tough to ..... but.....
- I surprised myself by.....
- I'm looking forward to.....
- I'm proud that I .....
- It was awesome/funny when.....
- The impact physical education is having on my heart is.....
- I know I am benefiting because.....
- I am seeing improvement in ..... because.....
- I like working in the .....Heart Zone best.
- The activity that helps my heart the most is.....



## ACTIVITY ASSESSMENT: LOG BOOK REFLECTION IDEAS<sup>2</sup>

This will help you understand your skills, exertion levels and unique abilities.

1. Do you consider yourself physically fit? Explain why or why not.
2. What physical activities are you good at, e.g., those requiring endurance, strength, flexibility?
3. What are your favourite physical activities?
4. What physical activities do you dislike?
5. Do you prefer team activities or individual activities? Why?
6. What physical skills have you learned over the past six months?
7. What sports would you like to perform better?
8. What is your personal assessment of your level of physical activity? Circle one descriptor below.
  - Fit? Ha! Where's the remote control?
  - I have some work to do!
  - Fair
  - Average
  - Good
  - Very good!
  - Outstanding!!

---

2. Adapted from

<http://www.education.gov.ab.ca/physicaleducationonline/HomeEducation/student/assess/assess1.htm>

## VALUES ASSESSMENT: LOG BOOK REFLECTION IDEAS<sup>3</sup>

This will help you understand your interests, needs and feelings about physical activity and health.

1. Is physical activity important to you? Why or why not?
2. Do you feel that you live a physically active lifestyle? Explain.
3. Is there an athlete you admire? Why?
4. List the benefits you'd like to receive from being active.
5. Over the next several months, what do you need to change to have a physically active lifestyle?
6. Do you think that what you put in your body affects your energy level and performance? List ways you can improve your ingestion habits to ensure a healthier body.
7. How can you improve your attitude toward active living?
8. How can you be more open to activities you haven't tried?
9. If you can change one habit or attitude over the next several months to ensure an active lifestyle, what will that be? Explain.

---

3. <http://www.education.gov.ab.ca/physicaleducationonline/HomeEducation/student/assess/assess1.htm>



## ♥ 2—What are my heart-rate numbers?

### Physical Education Learning Outcomes



#### **Benefits Health:**

Functional Fitness B  
(10–30)–3



#### **Do It Daily...For Life:**

Goal Setting  
Personal Challenge  
D (10–30)–6

### Learning Activity

Prerequisite—Students gather personal heart-rate numbers from a variety of body positions and physical activities.

### Key Understanding

Heart-rate numbers are unique to individual physiology. No two people have the same set of numbers.

### Background Information

Heart-rate data provides an excellent window into a person's physiology. For a short introduction of how the heart functions, see Appendix E, page 78. Students who know their heart-rate numbers are better prepared to monitor their heart health and fitness. By becoming aware of heart-rate data, students learn about their hearts and about the various factors that affect heart health, e.g., activity, stress, food, smoking, humidity, sleep, illness, medication and altitude. Heart-rate data can be collected:

- by palpation (carotid or radial pulse), see Appendix F page 79
- using a heart-rate monitor, see Appendix G pages 80–81
- a combination of both.

### Equipment/Materials

- Student Worksheet 4: True Resting Heart Rate, page 22
- Student Worksheet 5: Heart Rate Homework, page 23
- Student Worksheet 6: What are my Heart-rate Numbers? pages 24–25
- Pencils, clip-boards
- Heart-rate monitors, if available

## ♥ 2—What are my heart-rate numbers?

### Procedures

1. Copy and distribute Student Worksheet 4, page 22. Teach students how to collect their resting heart rates accurately.
2. Copy and distribute Student Worksheet 5, page 23. Have students take this worksheet home for homework.
3. Help students measure and record their heart-rate numbers after participating in a variety of activities.
  - Copy and distribute Student Worksheet 6: What are my heart-rate numbers? pages 24–25. Explain that students will be measuring their heart rates after a variety of activities with different intensity levels. They will then create a graph that shows a linear increase in heart-rate measurements as their activity levels increase.
  - If using heart-rate monitors, teach students how to use them. See Appendix G: Heart-rate Monitor Parts and Their Functions, pages 80–81. If using the palpation method, explain, demonstrate and practise this technique. See Appendix F: Tips on Taking Your Heart Rate While Exercising, page 79.
  - Have students complete the activities listed on the graph on page 24. As the intensity of the exercise increases, the heart rate should increase until students reach their anaerobic thresholds—an intensity that is hard but can be maintained for 15–60 minutes. Discuss individual differences and how different graph numbers are appropriate.
  - Discuss the inquiry questions on pages 24 and 25 and assign them for homework.
  - Encourage students to take multiple readings over a period of classes for a variety of physical activities and body positions to establish base-line data.
  - If available, have students wear pedometers during the activities and record both their heart rates and pedometer readings.
4. Have students use the information gathered to determine their maximum heart-rate (Max HR) numbers. It is a good idea for students to choose three of the five methods provided to arrive at a personal average.

### Heart Healthy Tips

- When using a pulse to obtain a heart rate, provide more than a one-count session. For example, provide a six or 10-second count and immediately after, provide a second six or 10-second count for students who were a little late in palpating their pulse.

## ♥ 2—What are my heart-rate numbers?

- Heart-rate Monitors
  - Demonstrate how to use a heart-rate monitor.
  - Familiarize yourself with the basic care and maintenance of heart-rate monitors. See Appendix G, pages 80–81.
  - Establish a system for distributing heart-rate monitors. See Appendix H, page 82 for a sample heart-rate monitor check-in/check-out sheet.
  - Be prepared to trouble-shoot heart-rate monitoring activities during class.
  - Provide a spray bottle with a mild cleaning solution or a bucket of warm water and a towel to clean the transmitters.
- Encourage students to ask questions.
- Be prepared initially to have the students collect heart-rate data over two or three classes. A large gym provides many opportunities to raise the heart rate. In subsequent classes, alternate venues can be used. An activity with lots of running is ideal.
- Encourage students to take their resting heart rate and their heart rate after exercising on a regular basis outside of class.
- For further activity ideas, see the physical education online Web site at:  
<http://www.education.gov.ab.ca/physicaleducationonline/teacherresources>.

### Student Inquiries

The sample questions below will help lead students to new inquiries.

- Is this a good heart-rate number?
- Does a higher heart rate mean better fitness?
- Does a lower resting heart rate mean better fitness?
- Am I missing some of the beats in my count because my heart is beating so hard?
- How do my heart-rate numbers compare to my parents, siblings and friends?
- What is my heart rate during an exam or thinking about an exam?
- How much does my heart rate fluctuate throughout the day?
- Why does my heart rate fluctuate so much while I'm sitting?
- What is the lowest heart rate I can have?

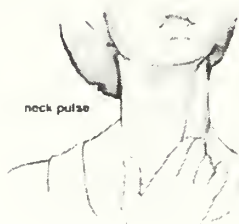
## True Resting Heart Rate

Collect your true resting heart rate for three to five mornings. The easiest method of obtaining your resting heart rate is to use the palpation method in the morning before getting out of bed.

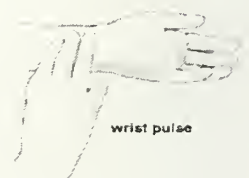
### Radial or carotid pulse

- Use your index and middle finger to take your pulse, not your thumb. (Your thumb has a pulse too which can make counting inaccurate.)
- Have a stopwatch, watch or clock that displays time in seconds.
- Confirm the procedure below by practising a few times.
- Count the number of pulses you feel in 15 seconds and multiply by four, or count for a total of one minute.
- Record your results.

### Where to find your pulse



- **Wrist:** Find the tendon running down the centre of the inside of your arm. Take your pulse on the thumb side of that tendon.
- **Neck:** Take your pulse on the carotid artery next to your Adam's apple. (Take your pulse on the same side of your neck as the hand you use to feel the pulse.)



Your carotid artery is pressure sensitive so don't press too hard.

Caution: Do not take a pulse rate on both sides of the neck at one time.

Use the chart below to record your resting heart rate and calculate the average.

Date	15 second count	1-minute count
_____	_____ × 4 =	_____
_____	_____ × 4 =	_____
_____	_____ × 4 =	_____
_____	_____ × 4 =	_____
_____	_____ × 4 =	_____
	<b>Total</b>	=====

Calculate the average by dividing the **Total** by the number of times you took your resting heart rate. **My resting heart rate** = \_\_\_\_\_

**Note:** Another method of obtaining information about your resting heart rate is to wear a heart rate monitor while you sleep. Set the watch to record every 30 minutes and download the information from the watch to receive the average resting heart rate. This should be repeated over several nights to get a true average.



Name: \_\_\_\_\_

Week of: \_\_\_\_\_

## ♥ heart-rate numbers ♥

<b>Monday</b>	<b>activity:</b>	<b>heart rate</b>
Resting Heart Rate:	_____	___
_____	_____	___
_____	_____	___
<b>Tuesday</b>	<b>activity:</b>	<b>heart rate</b>
Resting Heart Rate:	_____	___
_____	_____	___
_____	_____	___
<b>Wednesday</b>	<b>activity:</b>	<b>heart rate</b>
Resting Heart Rate:	_____	___
_____	_____	___
_____	_____	___
<b>Thursday</b>	<b>activity:</b>	<b>heart rate</b>
Resting Heart Rate:	_____	___
_____	_____	___
_____	_____	___
<b>Friday</b>	<b>activity:</b>	<b>heart rate</b>
Resting Heart Rate:	_____	___
_____	_____	___
_____	_____	___

## ★ This week's goal

Take my resting heart rate at least three mornings before I get up.

## ★ Don't forget

Use the middle and forefinger on the neck or wrist and count heart rate for at least 15 seconds.

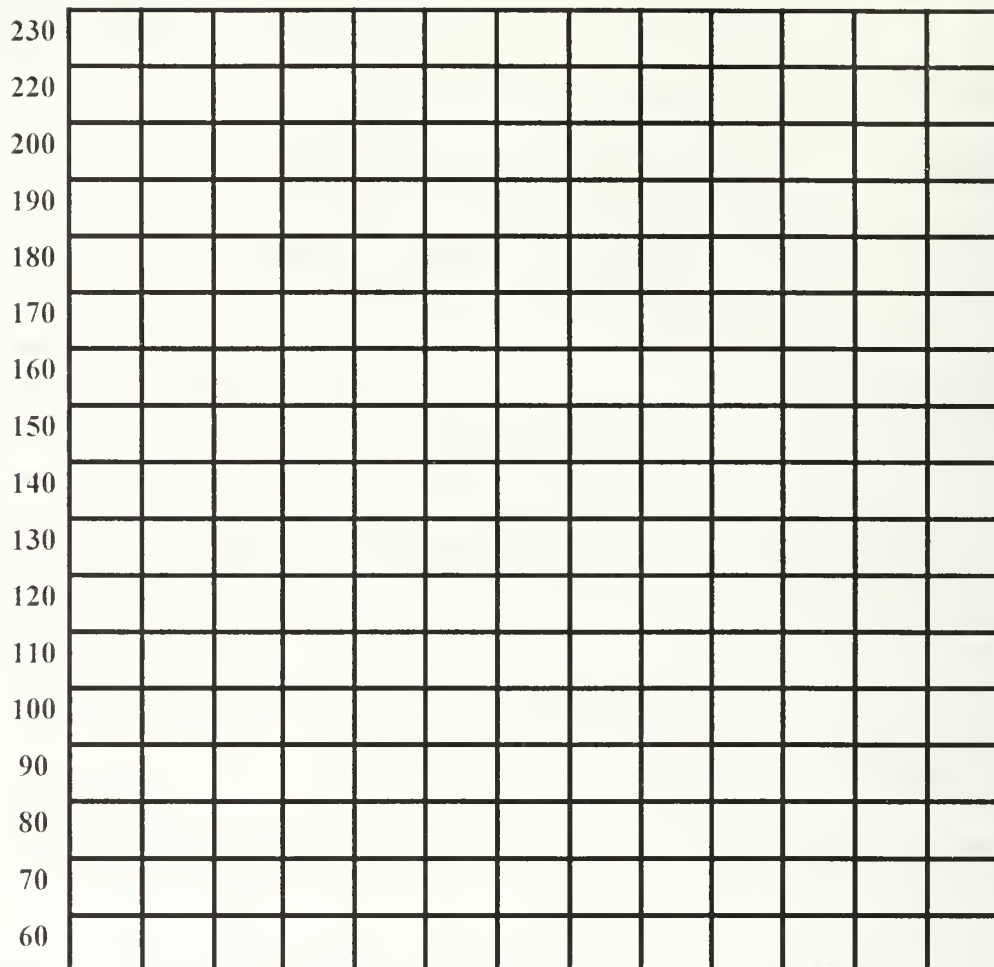
Multiply by 4 to get a 60-second count and record.

## ★ Challenge ★

1. Obtain a resting heart rate every day this week and count for a full minute.
2. Obtain heart rates during different activities, e.g., sitting, doing an exam, homework, walking to school.



## What are my heart-rate numbers?

Heart  
RatesACTIVITY  
CHOICES

resting heart rate	Sit 1 min	Stand 1 min	Walk 1 min	power walk 1 min	jog 1 min	sprint 30 sec	2 km run	Step up /down 3 mins	recovery 1 min 2 min 3 min 4 min				
--------------------------	--------------	----------------	---------------	------------------------	--------------	------------------	-------------	----------------------------	-------------------------------------	--	--	--	--

HR monitor reading  
HR manual reading


Pedometer Reading

--	--	--	--	--	--	--	--	--	--	--	--	--	--

## Check for understanding:

- How much higher was your peak HR than your resting?  
Peak \_\_\_\_\_ - resting \_\_\_\_\_ = \_\_\_\_\_ bpm
- What was the difference in HR between resting and recovery after four minutes?  
Resting \_\_\_\_\_ - recovery \_\_\_\_\_ = \_\_\_\_\_ bpm

3. How would you describe your fitness level based on this experiment and why?

---



---



---

4. How did the pedometer readings relate to your heart rate readings?

---



---



---

5. What could you do to alter your results next time?

---



---



---

**↑ Intensity = ↑ Heart Rate**

**Increasing intensity equals an increase in heart rate**

Your graph should show a linear increase until you reach your anaerobic threshold.  
(Notify your teacher if after several repeats, you are not getting a linear increase.)

**Calculations for determining Maximum Heart Rate (bpm = beats per minute)**

- |   |                           |           |
|---|---------------------------|-----------|
| 1) Heart Rate During 2 km Run                 | _____ bpm × 1.15 =        | _____ bpm |
| 2) Heart Rate During 1 km power walk          | _____ bpm × 1.30 =        | _____ bpm |
| 3) Heart Rate after 3 minutes of step up/down | _____ bpm × 1.55 =        | _____ bpm |
| 4) Warm-up and sprint against a classmate     | _____ bpm + 10 beats =    | _____ bpm |
| 5) Biggest number you have ever seen          | _____ bpm Activity: _____ |           |

### ♥ 3—What do my heart-rate numbers mean?

#### Physical Education Learning Outcomes



##### **Benefits Health:**

Functional Fitness B  
(10–30)–2



##### **Do It Daily...For Life:**

Effort D (10–30)–1  
D (10–30)–2

#### Learning Activity

Students discover how heart-rate numbers contribute to setting fitness and performance goals. Students use a variety of activities to discover their maximum heart rates and develop the ability to understand their heart rates.

#### Key Understanding

By interpreting and understanding what heart-rate numbers mean and the benefits of exercising in various heart rate zones, students are in a better position to plan and implement activities to improve their heart health.

The Zones Chart, pages 29–31, provides information about the characteristics and benefits of working the heart in various zones.

#### Equipment/Materials

- The Zones Chart,<sup>TM</sup> pages 29–31
- Maximum Heart Rate<sup>TM</sup> Chart, page 32
- Student Worksheet 7: Heart Zones Training<sup>TM</sup> Plan, pages 33–34
- Computer lab and Internet access

The following activities can be used to determine maximum heart rate (MHR). These assessments are easy to complete and do not push students to their maximum heart rates, which should only be tested under the supervision of qualified professionals.

The results, when averaged, provide students with their maximum heart rates. This information is key in determining students' optimal heart-rate zones.

For most healthy, active students, a MHR is determined by measuring the heart rate after warm-up followed by strenuous activity for two to four minutes. Adding 10 beats to the heart rate taken at the end of the strenuous activity provides a valid MHR.

#### Procedures

1. Have students choose three of the following five methods to arrive at a personal average MHR.
  - Heart rate after a 2 km Run  
\_\_\_\_\_ bpm  $\times$  1.15 = \_\_\_\_\_ bpm\*

\*bpm = beats per minute



### ♥ 3—What do my heart-rate numbers mean?

- Heart rate during 1 km power walk  
\_\_\_\_\_ bpm  $\times 1.30 =$  \_\_\_\_\_ bpm
- Heart rate after 3 minutes of step up/down  
\_\_\_\_\_ bpm  $\times 1.55 =$  \_\_\_\_\_ bpm
- Warm-up and sprint against a classmate  
\_\_\_\_\_ bpm  $\times + 10$  beats  $=$  \_\_\_\_\_ bpm
- Highest number recorded \_\_\_\_\_ bpm  
Activity: \_\_\_\_\_

Ask students to visit <http://www.heartzones.com> during class or assign it for homework.

2. Introduce the Zones Chart on pages 29–31 and discuss the various concepts and information included. Guide student understanding of heart-rate numbers using the five training zones on the chart.
3. Copy and distribute Student Worksheet 7: Heart Zones Training Plan, pages 33–34. Once students have determined their maximum heart rates, they can use the chart to calculate their five training zones by following these steps.
  - Ask students to find their MHR along the top row of the chart on page 33.
  - Examine the five training zones in the chart. For example, an individual with a Max HR of 200 would have the following training numbers:

	a range of
Zone 5 (90–100% of individual Max HR)	180–200
Zone 4 (80–90% of individual Max HR)	160–180
Zone 3 (70–80% of individual Max HR)	140–160
Zone 2 (60–70% of individual Max HR)	120–140
Zone 1 (50–60% of individual Max HR)	100–120
4. Students can use this chart to plan their own training or workout programs, or determine fitness goals.
5. Ask students to take their heart rates while participating in activities during and after class. Discuss which zones they were participating in.

### ♥ 3—What do my heart-rate numbers mean?

#### Heart Healthy Tips

Heart Zones Training is based on the number of times the heart beats during an activity. The number of heart beats identifies a zone. A zone is simply a range of heart beats, called a cardiac training range. The range reached during activity defines what the individual training program would look like depending on the desired goal. Heart Zones Training is a method of training more efficiently and effectively.

- Heart Zones™ Max HR Chart and Zones Chart are available in large chart format (18" by 24") at <http://www.lrc.education.gov.ab.ca>. Charts can be posted in various activity areas, e.g., gymnasium, fitness centre, dance studio.
- For further understanding of Heart Zones Training™ and other heart healthy materials see <http://www.heartzones.com>.
- Integrate this learning opportunity into regular physical education classes with a short reference to various zones. For example, during the warm-up of a lesson, briefly talk about the benefits of being physically active, how the body utilizes food for fuel and the type of energy expended in zone 1. Discuss activities with zone 1 intensity, e.g., walking the dog, participating in warm-ups and cool-downs.

#### Student Inquiries

The sample questions below will help lead students to new inquiries.

- In which zone is it best zone to work out?
- Do my zones change as I become more fit?
- What is a threshold?
- The charts in my fitness club indicate that the target heart rate should be between 70–85 percent of MHR. Do zones 1, 2 and 5 really matter?
- Should I work out in all five zones if I have no athletic aspirations?
- Can I always just work out in zone 3?
- What is the best intensity for someone just starting an exercise program?
- In which zone do I burn the most fat?
- Is it beneficial to do interval training using different zones?

# THE ZONES CHART

ZONE	MAXIMUM HEART RATE	FUEL BURNED	CALORIES BURNED (Cal/min)	WORKOUT TYPE	BENEFITS	HRT POINTS*	WELLNESS ZONES	LACTATE CONCENTRATION	VO <sub>2</sub> †	RATING OF PERCEIVED EXERTION	VERBAL DESCRIPTION
<b>5</b> REDLINE RED ZONE 	100% ↑ 90%	CARBONHYDRATES	~17 Cal/min ~ 510	Max effort, sprinting, high speed intervals	Improved lactate tolerance <b>GET FASTEST</b>	x5	↑	>8mm	100% ↑ 86%	10 ↑ 7	maximal effort to very, very hard
<b>4</b> THRESHOLD 	90% ↑ 80%		~13 Cal/min ~ 390	Time trials, intervals, tempo, hill work	Improved anaerobic capacity, lactate clearance <b>GET FASTER</b>	x4	↑	4-8mm	86% ↑ 73%	7 ↑ 5	very, very hard to hard
<b>3</b> AEROBIC 	80% ↑ 70%		~10 Cal/min ~ 300	Endurance and steady-state training	Improved aerobic capacity, optimal cardiovascular training <b>GET FITTER</b>	x3	↑	3-4mm	73% ↑ 60%	5 ↑ 4	hard to somewhat hard
<b>2</b> TEMPERATE GREEN ZONE 	70% ↑ 60%		~7 Cal/min ~ 210	LSD (long slow distance), recovery and regeneration	Improved fat mobilization, basic cardio training <b>STAY FIT</b>	x2	↑	<2.5mm	60% ↑ 48%	4 ↑ 2.5	somewhat hard to easy
<b>1</b> HEALTHY HEART BLUE ZONE 	60% ↑ 50%		~4 Cal/min ~ 120	Warm-up and cool-down, rehabilitation	Improved self-esteem, stress reduction, blood chemistry <b>GET FIT</b>	x1	↑	<2mm	48% ↑ 35%	2.5 ↑ 1	easy to very easy

Reprinted with permission of Heart Zones Training™ (2003).

## The Five Training Zones

### Zone 5: Redline (90–100% of MHR) Red

- Zone 5 is used primarily for high-performance training and for participants wanting to increase performance.
- This zone is used mostly during interval style training of short to intermediate durations.
- Intensity is high and the body will feel very warm.
- Too much time in this zone can lead to injury.
- Usually no more than 10 percent of total training time would be done at this level of intensity.
- Forty-eight hours of recovery is recommended after training in zone 5.
- Many calories are expended in zone 5, with the major source of fuel being carbohydrates.
- Activities include sprints and high-speed intervals.
- Performance benefits include improved lactate tolerance and improved performance.
- Rating of perceived exertion: effort is described as seven to 10 out of 10 and “very, very hard to maximal effort.”

### Zone 4: Threshold (80–90% of MHR) Orange

- In zone 4 the anaerobic threshold or maximum fat burning takes place.
- Many calories are expended in zone 4, with the major source of fuel being carbohydrates.
- Activities at this level include various high intensity sports, e.g., basketball, soccer, hockey, running, climbing stairs, wrestling, gymnastics.
- A beginner can maintain this level up to 15 minutes; a trained athlete for up to 60 minutes.
- Performance benefits include improved  $\dot{V}O_2$  Max (volume of oxygen consumed while exercising) speed and lactate tolerance.
- Rating of perceived exertion: Effort is described as five to seven out of 10 and “hard to very, very hard.”

- Zone 3 is the prime zone for physical training.
- Fuel source is balanced between carbohydrates and fat, and gradually shifts toward increased carbohydrates at the upper end.
- Activities at this level can be sustained for long periods of time, e.g., swimming, cycling, tennis, soccer, running, basketball, power walking, dancing, cross country skiing.
- Fitness benefits include increased stroke volume, increase in size and number of blood vessels, improved oxygen utilization and overall increased fitness.
- Rating of perceived exertion: Effort is described as four to five out of 10 and “somewhat hard to hard.”

### Zone 2 Temperate (60–70% of MHR) Green

- Zone 2 is often called the cruise zone. This level can be sustained for extended periods of time.
- Other names include comfort zone, recovery zone or fat burning zone.
- For the fit individual, this zone is used primarily for recovery workouts and for warm-up and cool-down.



- For the individual just getting back into action, this is an excellent zone to work out in before moving into zone 3.
- Source of fuel is primarily fat but intensity is low so overall total calories expended are low in comparison to higher zones.
- Activities include long slow cycling, walking, hiking, volleyball, table tennis, recreational sports, canoeing.
- Benefits include improve fat utilization and mobilization, increased muscle mass and strengthened heart muscle.
- Rating of perceived exertion: Effort is described as 2.5 to four out of 10 and “easy to somewhat hard.”

### **Zone 1 Healthy Heart (50–60% of MHR) Blue**

- Zone 1 is the easiest and most comfortable zone.
- Combine this zone with zone 2 for someone just starting out or someone looking for health benefits more than performance benefits.
- Activities include walking, light yard or housework, golf, yoga, tai chi, softball, doubles badminton, archery, fishing.
- This zone burns few calories, causes minimal sweating and no change in oxygen utilization.
- There are many health benefits attained in this zone, e.g., stabilize blood pressure, increase lean body tissue, improve blood cholesterol profiles, strengthen tendons and ligaments, and lower the risk of degenerative diseases.
- Rating of perceived exertion: Effort is described as one to 1.5 out of 10 and “very easy to easy.”



# MAXIMUM HEART RATE

Training Zone (% maximum heart rate)	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR
<b>Z5 RED LINE 90%-100%</b>	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
	135	140	144	149	153	158	162	167	171	176	180	185	189	194	198
<b>Z4 THRESHOLD 80%-90%</b>	135	140	144	149	153	158	162	167	171	176	180	185	189	194	198
	120	124	128	132	136	140	144	148	152	156	160	164	168	172	176
<b>Z3 AEROBIC 70%-80%</b>	120	124	128	132	136	140	144	148	152	156	160	164	168	172	176
	105	109	112	116	119	123	126	130	133	137	140	144	147	151	154
<b>Z2 TEMPERATE 60%-70%</b>	105	109	112	116	119	123	126	130	133	137	140	144	147	151	154
	90	93	96	99	102	105	108	111	114	117	120	123	126	129	132
<b>Z1 HEALTHY HEART 50%-60%</b>	90	93	96	99	102	105	108	111	114	117	120	123	126	129	132
	75	78	80	83	85	88	90	93	95	98	100	103	105	108	110

## Five Steps to Better Fitness and Performance

1. Heart Zone: Ask students to select one of the five different training zones based on the exercise goals for your workout. Students should understand that they do not have to stay in one zone for an entire workout nor are they expected to utilize zone 5 for extended periods.
2. Maximum Heart Rate: Students find their maximum heart rates along the top horizontal row of numbers.
3. Determine the Training Zone: The box where the selected training zone and MHR column intersect is the heart-rate training zone.
4. Set the Zone: The lower heart rate number in this box is the floor of the training zone and the upper number is the ceiling.
5. Stay in Zone: During each workout, students maintain their heart rates between their zone floors and ceilings (excluding warm up and cool down).

### A Student's Maximum Heart Rate:

- is the anchor point for determining the five training zones
- can vary from 185–240 beats per minute (bpm)
- is skill specific (greater muscle mass usage = higher MHR, e.g., a national level badminton player is able to raise the heart rate higher than a recreational player during a badminton game)
- does not indicate better or worse athletic performance or fitness
- is a fixed number, unless a person becomes unfit
- does not decline with age, providing a person remains active
- is affected by drugs and other medications
- is altitude sensitive (drops approximately 1bpm/1000feet elevation gain)
- is not accurately determined with a formula.<sup>4</sup>

4. Robergs, R. & Landwehr, R. 2002. "The Surprising History of the 'HRmax=220-age' Equation. *Journal of Exercise Physiology*, Vol 5, No.2. Available on-line at <http://www.css.edu/users/tboone2/asep/Robergs2.pdf>. Accessed Dec. 3, 2003.

## Heart Zones Training™ Plan

Name: \_\_\_\_\_

1. Your biggest number/Maximum heart rate (youth MHR range from 185–240 bpm) \_\_\_\_\_ beats per minute (bpm) doing \_\_\_\_\_ activity.
2. Calculate your five training zones using the Heart Zones maximum heart rate chart.\*  
Round your biggest number to the nearest multiple of five.

★ Reprinted with permission Heart Zone Training.™

HEART ZONES		MAXIMUM HEART RATE														
HEART ZONES TRAINING		HEART ZONES TRAINING														
Training Zone (% maximum heart rate)	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR	Max HR
		150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
Z5 RED LINE 90%-100%		135	140	144	149	153	158	162	167	171	176	180	185	189	194	198
		135	140	144	149	153	158	162	167	171	176	180	185	189	194	198
Z4 THRESHOLD 80%-90%		120	124	128	132	136	140	144	148	152	156	160	164	168	172	176
		120	124	128	132	136	140	144	148	152	156	160	164	168	172	176
Z3 AEROBIC 70%-80%		105	109	112	116	119	123	126	130	133	137	140	144	147	151	154
		105	109	112	116	119	123	126	130	133	137	140	144	147	151	154
Z2 TEMPERATE 60%-70%		90	93	96	99	102	105	108	111	114	117	120	123	126	129	132
		90	93	96	99	102	105	108	111	114	117	120	123	126	129	132
Z1 HEALTHY HEART 50%-60%		75	78	80	83	85	88	90	93	95	98	100	103	105	108	110
		75	78	80	83	85	88	90	93	95	98	100	103	105	108	110

### Five Steps to Better Fitness and Performance

1. Heart Zone: Select one of the five different training zones based on the exercise goals for your workout.
2. Maximum Heart Rate: Find your maximum heart rate along the top horizontal row of numbers.
3. Determine your Training Zone: The box where your selected training zone and MHR column intersect is your heart-rate training zone.
4. Set the Zone: The lower heart rate number in this box is the floor of your training zone and the upper number is the ceiling.
5. Stay in Zone: During each workout, maintain your heart rate between your zone floor and ceiling (excluding warm up and cool down).

**My Cardiovascular Training Numbers**

Zone 5 Red Line	90–100% of MHR _____ to _____ bpm
Zone 4 Threshold	80–90% of MHR _____ to _____ bpm
Zone 3 Aerobic	70–80% of MHR _____ to _____ bpm
Zone 2 Temperate	60–70% of MHR _____ to _____ bpm
Zone 1 Healthy Heart	50–60% of MHR _____ to _____ bpm

**My Personal Physical Activities and Activity Frequency**

1. Activities in which I participate on a regular basis:

\_\_\_\_\_

2. My activities which are seasonal:

\_\_\_\_\_

3. I am active on weekdays for \_\_\_\_\_ minutes for \_\_\_\_\_ days/week. (Don't include P.E.)

4. I am usually active on weekend days for \_\_\_\_\_ minutes

5. I will achieve the following training goal in the next six weeks.

\_\_\_\_\_  
\_\_\_\_\_

6. I will record this goal in my physical education log book.



## ♥ 4—How does my body feel at various levels of intensity?

### Physical Education Learning Outcomes



**Benefits Health:**  
Functional Fitness  
B (10–30)–3



**Do It Daily...For Life:**  
Effort D (10–30)–1

Goal Setting  
Personal Challenge  
D (10–30)–6

### Learning Activity

Students create personal intensity scales that describe how the body feels at each intensity level.

### Key Understanding

Describing how the body feels during various forms of exertion is known as the rate of perceived exertion (RPE). Connecting these descriptions to heart-rate data at different levels of intensity, helps individuals better gauge the health, fitness, or performance benefits they receive from physical activity.

### Background Information

Connecting heart-rate data to a measure of perceived exertion helps students identify the zones in which they are working. This information also helps them maintain a predetermined pace or intensity level for an activity or event, even when they are not making regular note of their heart rates.

The Public Health Agency of Canada indicates that Canadians aged 15 years to adulthood should accumulate 30–60 minutes of physical activity every day to stay healthy or improve health.

Physical activity doesn't have to be hard to improve health. A goal of 30–60 minutes of activity can be reached by building physical activities into daily routines. Activity periods of 10 minutes throughout the day can improve health.

The following table provides examples of effort and intensity with suggested time allocations.

Very Light Effort	Light Effort 60 minutes	Moderate Effort 30–60 min.	Vigorous Effort	Maximum Effort
Strolling Dusting	Light walking Volleyball Easy gardening Stretching	Brisk walking Biking Raking leaves Swimming Dancing Water aerobics	Aerobics Jogging Hockey Basketball Fast swimming Fast dancing	Sprinting Racing

For more information see: <http://www.paguide.com>.

#### ♥ 4—How does my body feel at various levels of intensity?

Students can learn to recognize their activity levels by examining their perceived levels of exertion. To facilitate understanding of perceived levels of exertion, students can ask themselves these questions at each intensity level.

- How does the activity make me feel?
- How is my breathing?
- Am I sweating?
- How long can I maintain intensity, warmth and the feelings in my muscles?
- Does my level of exertion allow me to concentrate or focus on the activity?
- What am I feeling in other parts of my body, such as my head, stomach, arms and legs?
- Am I able to differentiate between intensity levels by listening to the rest of my body as well as my heart?

With practice, students can fairly accurately predict the intensity at which they are working. By creating their own scale or framework, students will be able to add detailed descriptions of how each level of intensity feels.

#### Equipment/Materials

- Heart-rate monitors
- The Zones Chart™, pages 29–31
- Student Worksheet 8: Perceived Intensity Scales, page 40
- Student Worksheet 9: Personal Intensity Scale, page 41
- Student Worksheet 10: Student Sample of Personal Intensity Scale, page 42
- Student Worksheet 11: Activity Circuit Station: Heart Zone Identification, page 43
- Student Worksheet 12: Personal Monthly Activity Log, page 44
- Appendix I: Activity Circuit Station Cards, pages 83–119
- Appendix J: Core Body Exercise Circuit Cards pages 120–145
- Pencils, clipboards

#### Procedures

1. Prerequisite: Prior to this activity, ensure all students have participated in activities in each zone.
  - At the beginning of the class, divide students into five groups. Have each group brainstorm descriptors for how they feel at each intensity level. They should record this information with coloured markers on chart paper. Groups rotate through all five zones and add

#### ♥ 4—How does my body feel at various levels of intensity?

ideas to their lists. As a class, discuss and revise descriptors as necessary. Create a list of activities that relate directly to the various zones. Facilitate discussion on the differences of intensity for each individual. For example, badminton may be a zone 5 for a nationally ranked player but for the average physical education student, it may be a zone 1 or 2. Students should refer to The Zones Chart™ on page 29 for descriptions.

- Copy and distribute Student Worksheet 8: Perceived Intensity Scales, page 40. Have students work individually or in pairs to develop their own custom-made perceived intensity scales. Begin this activity by asking students: “If you could use only one or two words at each intensity level, on a 10-point scale, what would your words be?”
- Have students create their perceived intensity scales in chart format. Students may enjoy sharing their personal intensity scales. These charts can be included in their log books.

Copy and distribute the Student Worksheet 9: Personal Intensity Scale, page 41. Encourage students to record and recognize their own intensity levels during activities, using their own intensity descriptors. For this activity, students work individually. Activities may include:

Zone 1—Brisk walking

Zone 2—Jogging

Zone 3—Refereeing a soccer game

Zone 4—Completing circuits

Zone 5—Sprinting.

Students submit their charts and compare this scale with their perceived exertion scales created initially. How do different students describe vigorous activities? Copy and distribute Student Worksheet 10: Student Sample of Personal Intensity Scale, page 42. Students can examine it for ideas.

2. Create activity situations designed to provide a variety of intensity levels. Copy and distribute Student Worksheet 11: Activity Circuit Station – Heart Zone Identification, page 43. Have students select activities from the circuit station cards. See Appendix I, pages 83–119 for circuit station cards and Appendix J, pages 120–145 for core body exercise cards. Have students list the activity

#### ♥ 4—How does my body feel at various levels of intensity?

stations they choose for their circuit on Student Worksheet 11. Ask students to take their heart rates after completing each station and enter the required information on the worksheet. Students should relate their feelings to a particular heart zone. Encourage students to achieve a time or repetition for a personal best. Following the circuit, have students complete the Check for Understanding questions on the bottom of page 43. Encourage students to share their answers with the class.

3. Copy and distribute Student Worksheet 12: Personal Monthly Activity Log, page 43. Students list activities they have participated in on a monthly basis. For each activity, they record their heart rates and comments. Have students complete the Check for Understanding questions at the bottom of the page.

#### Heart Healthy Tips

- Personal intensity scales can be integrated into physical education to enhance learning about heart health. Have students work in individual and group settings, e.g., personal training unit, track and field, dance, individual and team games. Ideally, integration of personal intensity scales works best in classes that provide a wide range of intensity levels.
- Integrate perceived intensity activities over the course of two to three weeks or within a variety of activities in your regular physical education classes.
- Heart-rate monitors provide an accurate means of comparing how students feel with actual heart rates. Heart-rate monitors can be rented from local Be Fit for Life Network locations. See [www.provincialfitnessunit.ca](http://www.provincialfitnessunit.ca).
- If heart-rate monitors are unavailable, teach students the palpation method of collecting heart rates using the pulse or carotid artery.
- Encourage students to listen to their bodies. The more descriptive they are, the easier it is for them to predict their intensity levels when they are not using heart-rate monitors or taking their pulse. Have them describe their breathing, feelings in their muscles, perspiration, ability to talk and emotional feelings. As students become fit they need to make adjustments. For example, students who have been sedentary may find it difficult to talk in zone 3. As their fitness level improves, they will soon be able to carry on a conversation at the zone 3 intensity level.

#### ♥ 4—How does my body feel at various levels of intensity?

- If students are going into their upper zones they should be supervised at all times to ensure safety.

##### **Student Inquiries**

The sample questions below will help lead students to new inquiries.

- Is there a heart zone that is best for fat burning?
- Is there a heart zone that is best for endurance training?
- Is it okay to train in the red zone repeatedly?
- What can I do to increase my heart zone in physical education class?
- In what zone should my parents be working?
- Am I getting health benefits if I work in zone 1 on a regular basis?
- How long do I have to work in a zone to get a health benefit?
- What zone do I need to work in to improve fitness?
- Which zone will help me lose weight?
- Are my intensity ratings the same as my classmates, parents or friends?
- Is it best to be active with someone who works at similar intensity levels?
- Will my personal intensity scale change as my fitness level improves?
- Will I feel comfortable working at the same intensity level every day?



## Perceived Intensity Scales

Using verbal descriptions or feelings, describe various exercise sensations. Assign a rating scale from 1–10, to each level of intensity. Maximum exertion ranks as 10 and the lowest level as 1.

Using the Heart Zones Training™ scale below as a model, create descriptors for your personal intensity scale on the right.

### Sample Scale

Perceived Intensity Scale 0–10 points      Heart Zones Training™	
0	Rest
1	Very easy
2	Easy
3	Moderate
4	Somewhat hard
5	Hard
6	Getting harder
7	Very hard
8	Very very hard
9	Ultra hard
10	Maximal

### My Intensity Scale

Perceived Intensity Scale 0–10 points	
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	



## Personal Intensity Scale (perceived level of exertion)

This is how I feel and the activities that get me into the zones

ZONE	My Feelings DESCRIPTORS: Breathing, body heat/sweating, ability to talk, muscle feeling, concentration, focus	Activities that get me in the zones	
		HEART RATE:	HEART RATE:
<b>5</b> <b>RED</b> 90–100% of Max HR			
<b>4</b> <b>THRESHOLD</b> 80–90% of Max HR			
<b>3</b> <b>AEROBIC</b> 70–80% of Max HR			
<b>2</b> <b>TEMPERATE</b> 60–70% of Max HR			
<b>1</b> <b>HEALTHY HEART</b> 50–60% of Max HR			

### CHECK FOR UNDERSTANDING

- Am I getting a cardiovascular benefit from this zone?
- How did my personal intensity scale differ with different sports? Why?
- How does the activity make me feel?
- How is my breathing?
- Am I sweating?
- How long can I maintain intensity, warmth and the feelings in my muscles?
- Does my level of exertion allow me to concentrate or focus?
- What am I feeling in other parts of my body, e.g., head, stomach, arms, legs?
- Am I able to differentiate between the different intensities by listening to the rest of my body as well as to my heart?

## Student Sample of Personal Intensity Scale



# Personal Intensity Scale

This is HOW I Feel in my Heart Zones  
and activities that get me into the zones



Zone	My Feelings	Activities that get me in the zone
211 BPM = Lightings 203 BPM = Running <b>5</b> <b>Red</b> 90-100% of maxHR	<ul style="list-style-type: none"> <li>- chest pains</li> <li>- muscles ache</li> <li>- head throbbing</li> <li>- unwillingness of muscles to move much longer</li> <li>- need for slow decrease of activity, opposed to sudden stoppage</li> <li>- breathing difficulties</li> </ul>	<ul style="list-style-type: none"> <li>- 15 minutes of lightning drill in hockey</li> </ul>
194 BPM = Hockey <b>4</b> <b>Threshold</b> 80-90% of maxHR	<ul style="list-style-type: none"> <li>- shortness of breath causing for panting like breathing</li> <li>- leg muscles very sore</li> <li>- need for quick break before wanting to continue activity</li> <li>- very hot feeling</li> </ul>	<ul style="list-style-type: none"> <li>- Playing hockey games</li> <li>- sprinting</li> <li>- constant running during a rugby game</li> </ul>
174 BPM = Refereeing <b>3</b> <b>Aerobic</b> 70-80% of maxHR	<ul style="list-style-type: none"> <li>- Body feels nice and warm</li> <li>- feel ability to continue on for long periods of time</li> <li>- breathing speeds up</li> <li>- cold fingers</li> <li>- loose muscles</li> <li>- Substantial sweating</li> </ul>	<ul style="list-style-type: none"> <li>- Refereeing a hockey game</li> <li>- light hockey practice</li> <li>- swimming lengths in the pool</li> </ul>
148 BPM = Marching Parade <b>2</b> <b>Temperate</b> 60-70% of maxHR	<ul style="list-style-type: none"> <li>- Knee pains</li> <li>- tightening muscles</li> <li>- feeling like my body wants needs to do more work to feel better</li> <li>- slightly accelerated breathing</li> <li>- sweating increases</li> </ul>	<ul style="list-style-type: none"> <li>- marching and playing in a parade</li> <li>- being a linesman for a hockey game</li> <li>- jogging lightly</li> </ul>
<b>1</b> <b>Healthy Heart</b> 50-60% of maxHR 119 BPM = Brisk walk	<ul style="list-style-type: none"> <li>- feeling as though little to no work being done</li> <li>- little to no sweating</li> <li>- breathing similar to resting</li> <li>- feels as though I am warming up to something more intense</li> </ul>	<ul style="list-style-type: none"> <li>- Briskly walking the dog</li> <li>- swimming in the pool for leisure</li> <li>- playing ping pong</li> </ul>

© B. Robinson, Calgary, AB, 2003



## Activity Circuit Station: Heart Zone Identification

**Learning Outcome:** Plan, assess and maintain personal fitness

- ✓ List the circuit stations you will complete, along with today's date.
- ✓ Enter the required information on your worksheet after completing each station.
- ✓ Go for a personal best (PB) by trying to improve times or the number of repetitions completed.
- ✓ Indicate the zone in which you worked and the health fitness factors for each activity.

**Health Fitness Factors:** C = Cardio, S = Strength, F = flexibility



Date:		Date:	Date:	Date:
Circuit Station Activity	Health Fitness Factors	Intensity Descriptors	Intensity Descriptors	Intensity Descriptors
1.	HR ZONE			
2.	HR ZONE			
3.	HR ZONE			
4.	HR ZONE			
5.	HR ZONE			
6.	HR ZONE			
7.	HR ZONE			
8.	HR ZONE			
9.	HR ZONE			
10.	HR ZONE			

### CHECKING FOR UNDERSTANDING

- Looking at your intensity descriptor list from your circuit results, in which zone do you think you spent the majority of time during this particular circuit?
- Looking at your zone list from your circuit results, in which zone did you spend the least time during this particular circuit?
- Was there any particular zone in which you felt you did not work today? Why? Modify two of the activities to reach a different heart zone, one to increase and one to decrease the level of intensity.
- If you could create three new stations that you would enjoy, what would they be? What heart zone do you think you would achieve for each activity?

**Month:**

**Personal Monthly Activity Log**

List activities you participated in during the past month along with your heart rate and any comments		1	2	3	4	5	6
Activities/HR	Comments:	Activities/HR	Activities/HR	Activities/HR	Activities/HR	Activities/HR	Activities/HR
Activities/HR	Comments:	8	9	10	11	12	13
Comments:	Comments:						
Activities/HR	Comments:	15	16	17	18	19	20
Comments:	Comments:						
Activities/HR	Comments:	22	23	24	25	26	27
Comments:	Comments:						
Activities/HR	Comments:	29	30	31	<b>CHECK FOR UNDERSTANDING</b> <ul style="list-style-type: none"> <li>During which activity did you have the highest heart rate? Why do you think this is?</li> <li>During which activity did you have the lowest heart rate? Why do you think this is?</li> <li>Describe ways you could increase your heart rate during the activity you claimed provided your lowest heart rate.</li> </ul>		
Comments:	Comments:						

## ♥ 5—Am I getting cardiovascular benefits in physical education class?

### Physical Education Learning Outcomes



#### **Benefits Health:**

Functional Fitness B  
(10–30)–2, B (10–30)–3



#### **Do It Daily...For Life:**

Effort D (10–30)–1

### Learning Activity

Students suggest and implement strategies to ensure a cardiovascular health benefit in physical education class.



### Key Understanding

Any movement that elevates the heart rate benefits the heart. Participating in activities that allow the heart rate to reach zone 1 and 2 improves the health of the heart. In order to improve heart health further, a higher level of intensity is required.

### Equipment/Materials

- Two or three heart-rate monitors or pedometers, if possible
- Watches or clocks that measure seconds
- Maximum Heart Rate™ Chart, page 32
- Student Worksheet 13: Heart Rate Response, page 48
- Student Worksheet 14: Are you getting cardiovascular benefits in PE class? page 49.

### Procedures

1. Provide a variety of activities designed to increase heart rates. See Appendix K, pages 146–150 for sample activities. Explain the procedures for each activity.
2. Copy and distribute Student Worksheet 13, page 48. Students will analyze and record their heart rates at the end of each activity using heart-rate monitors or palpation readings and record their data on the worksheet. Heart rates can be recorded as a number or plotted on the graph.
3. If students are using pedometers, they can record the readings after recording their heart-rate readings.
4. Have students work in pairs to answer the questions at the bottom of the worksheet. Allow time for class discussion afterwards.
5. Have students place the completed worksheets in their log books.
6. After gathering data from several physical education classes, students can compute an average heart rate for physical education class by dividing the total heart-rate number by the number of activities for which a heart rate



## ♥ 5—Am I getting cardiovascular benefits in physical education class?

was recorded. Students then compute an average heart rate and determine in which zone their average heart rate is located.

Example of an average heart rate calculation

Activity	Heart Rate
1	125 bpm
2	135 bpm
3	127 bpm
4	187 bpm
Total	574 bpm
÷ 4 activities =	143.5 bpm (Zone 3)

7. Copy and distribute Student Worksheet 14: Are You Getting Cardiovascular Benefits in Physical Education Class?, page 49. After determining their average heart rates for physical education class, students can use it to determine if they are active enough in physical education to get a cardiovascular benefit. Students can use this worksheet to set goals for improving their cardiovascular health. Have students consider what type of cardiovascular benefit they obtained, and reflect on what they could do in future classes to enhance their heart health and fitness.

### Heart Healthy Tips

- Some heart-rate monitors are downloadable onto a computer and can be used to create a heart-rate profile for students' log books.
- Refer students to their Personal Intensity Scales, page 41. Encourage continual review and revision of these scales.
- See Appendix D, page 77 for strategies to promote cardiovascular benefits in physical education class.
- During physical education class, have students come together to stretch, discuss heart rates or pedometer readings, fitness benefits and other related information (Outcome B). This discussion time is also valuable for engaging students in goal-setting activities (Outcome D).
- For more activity ideas for physical education see: <http://www.education.gov.ab.ca/physicaleducationonline/teacherresources>.



## ♥ 5—Am I getting cardiovascular benefits in physical education class?

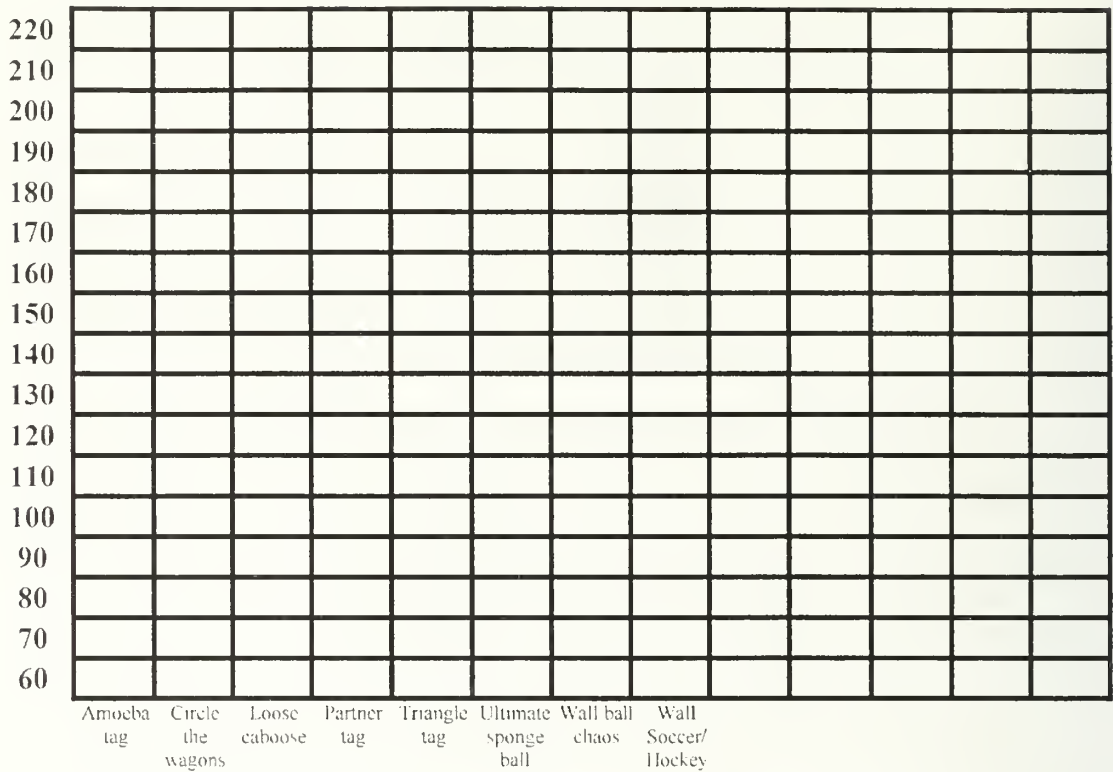
### Student Inquiries

The sample questions below will help lead students to new inquiries.

- What activities outside of class will provide good cardiovascular benefits?
- What types of activities could I suggest to my friends, siblings, family members that would provide cardiovascular benefits?
- Is there such a thing as too much cardiovascular training? (Discuss over-training.)
- How can I determine if I am training too hard? (Discuss importance of monitoring resting heart rate, amount of sleep and overall training plan.)
- How much recovery time is required after a really vigorous training session?

### Heart-rate Responses

Ensure the activities listed on the horizontal axis of the graph reflect the activity choices in the physical education lessons.



Pedometer reading

--	--	--	--	--	--	--	--	--	--	--	--	--	--

HR monitor reading

--	--	--	--	--	--	--	--	--	--	--	--	--	--

HR manual reading

--	--	--	--	--	--	--	--	--	--	--	--	--	--

- Which activity raised your heart rate the most? Why?  
\_\_\_\_\_
- Which activity produced your lowest heart rate? Why?  
\_\_\_\_\_
- Suggest a modification for the activity with your lowest heart rate to provide improved heart-rate training.  
\_\_\_\_\_
- How did the pedometer readings relate to your heart-rate readings?  
\_\_\_\_\_
- What could you do to improve your results next time?  
\_\_\_\_\_

## Are You Getting Cardiovascular Benefits in Physical Education Class?

Achieving Optimal Cardiovascular Fitness <b>4</b>	Improving Cardiovascular Fitness <b>3</b>	Maintaining Cardiovascular Fitness <b>2</b>	Basic Health Benefit <b>1</b>
Achieves an average heart rate in upper zone 4–5 and shows some time spent in zones 4 and 5.	Achieves an average heart rate within zone 3.	Achieves an average heart rate in upper zone 2.	Achieves an average heart rate in lower zone 2 or 1.

1. In physical education class, which level of cardiovascular fitness are you currently operating in?

Reflect on your cardiovascular fitness and provide comments:

---

2. Which level of cardiovascular fitness do you want to achieve in physical education class?

---

3. How can you increase cardiovascular opportunities in physical education class?

---



---



---

## ♥ 6—Am I active enough each day to receive health/fitness benefits?

### Physical Education Learning Outcomes



#### Benefits Health:

Functional Fitness, B  
(10–30)–3



Do It Daily...For Life:  
Effort D (10–30)–1

Goal Setting  
Personal Challenge D  
(10–30)–6

### Learning Activity

Students assess the frequency and intensity of their current daily physical activity habits and determine whether their physical activity levels provide cardiovascular benefits that improve and/or maintain physical fitness.



### Key Understanding

Individuals aged 15 and older are encouraged to increase their physical activity time to 60 minutes per day, of which 30 minutes, should be vigorous.<sup>5</sup>

### Background Information

Vigorous activity occurs when heart rates are in zone 3 or higher. Flexibility and strength activities often take place in the less-vigorous zones 1 or 2.

Students should be encouraged to accumulate 60 minutes of activity a day in periods of at least 10 minutes each. Students should also be encouraged to make a conscious effort to decrease non-active time. Small changes in activity levels and small reductions in non-active time often result in significant changes in physical and psychological health over the course of several months and/or years.

Research suggests that people who track their activity on a daily basis are better able to adhere to exercise or training programs.

Recording physical activity provides:

- a daily dose of motivation
- assistance in achieving personal goals
- evidence of progress, e.g., five weeks ago it was tiring to walk 45 minutes at a brisk pace, now it is easier
- confirmation of the effectiveness of personal training programs.

### Equipment/Materials

- Student Worksheet 15: Physical Activity Record, page 54.

5. Health Canada. 2002. Physical Activity Guide. <http://www.healthcanada.ca/paguide>.

## ♥ 6—Am I active enough each day to receive health/fitness benefits?

- Various online physical activity tracking tools, e.g., Student assessment form at <http://www.education.gov.ab.ca/physicaleducationonline/HomeEducation/student/intro/intro.htm>.
- Student Worksheet 16: Assessment Rubric: Do It Daily, page 55.
- Student Worksheet 17: Goal Setting Organizer, page 56.
- Canada's Physical Activity Guide, available online at <http://www.healthcanada.ca/paguide> or 1-888-334-9769.
- Pedometers.

### Procedures

1. Copy and distribute Student Worksheet 15: Physical Activity Record, page 54. Have students track their physical activity for a predetermined period, e.g., a term, the school year, two weeks. Requiring students to record physical activity can be a prime tool to motivate further action. Students should submit the completed Physical Activity Records or include them in their log books.
2. Copy and distribute Student Worksheet 16: Assessment Rubric: Do It Daily, page 55. Have students analyze their personal data. This analysis could include the following questions.
  - Do you meet, exceed or fall below the recommended 30–60 minutes of daily activity?
  - Are you more or less active on the weekends?
  - What activities do you enjoy most?
  - What influences do others have on your activity level?
  - What are the barriers that keep you from being more active?
  - Is it possible to remove some of the barriers and if so, how?
  - What strategies can you adopt to increase your level of activity?
3. Copy and distribute Student Worksheet 17: Goal Setting Organizer, page 56. Have students write personal goals based on the analysis of data from the Physical Activity Records.

After completing the Goal Setting Organizer worksheets, ask students to include them in their log books. Use the assessment rubric to help students understand how to set and achieve goals related to increasing time spent daily in physical activity.



## ♥ 6—Am I active enough each day to receive health/fitness benefits?

4. If pedometers are available, students can measure physical activity by recording their daily steps. A goal of 10,000–12,000 steps a day provides health benefits. Measuring time and intensity, or perceived intensity, of activity using heart-rate monitors, along with the number of steps, provides a broader picture of students' activity levels.
  - For more information on how to use and care for pedometers, see Appendix C, page 76.
  - Students can record interesting data with their pedometers, e.g., How many steps do I take in various physical education classes? How many steps do my teachers take each day? What activity requires the most steps?

### Heart Healthy Tips

- Invite students to provide input on the Do It Daily rubric, page 55, to customize the rubric to meet their personal needs.
- Create a bulletin board that promotes physical activity opportunities within the community. Encourage students to post opportunities as well.
- Encourage students to modify the Physical Activity Record, page 54, to reflect their personal preferences on the types of goals they wish to set.
- Encourage students to use the electronic tracking database provided online at:  
<http://www.education.gov.ab.ca/physicaleducationonline/HomeEducation/student/intro/intro.htm>.
- If students are using pedometers, they can donate their steps to research by logging onto  
<http://www.canadaonthemove.ca>.
- Basic pedometers are available at department, electronic and sports stores. Some are simple and provide steps only. To reduce losses, select pedometers with safety straps. Pedometers are available through the Learning Resource Centre at <http://www.lrc.education.gov.ab.ca>.

### Student Inquiries

These questions will help lead students to new inquiries.

- What type of record keeping works best for me, e.g., paper and pencil, spreadsheet or online tracking system?
- What activities outside of physical education classes are most accessible or popular for my age group, culture, gender?
- How could I get more people involved in these activities?
- What are the barriers to participation in recreation centres, sport facilities and school athletic facilities?

**♥ 6—Am I active enough each day to receive health/fitness benefits?**

- What suggestions could I make to overcome these barriers?
- What could the school do to help increase my physical activity, e.g., daily physical education classes, intramurals, walk-to-school program, physical activity fair, activity-based clubs?

## Name: \_\_\_\_\_

**Vigorous** = zone 3 and up

**Type** = endurance, flexibility, strength

[illegible]

## Assessment Rubric: Do It Daily

Name: \_\_\_\_\_

CRITERIA	4	3	2	1
<b>Frequency Intensity Time (Outcome B)</b>	Log entries indicate I am physically active 4–7 times per week for at least 60 minutes, of which 30 are vigorous (zones 3–5). Activities include flexibility and strength activities at least 2–4 times per week.	Log entries indicate I am active for at least 60 minutes every day, with 30 minutes being vigorous (zones 3–5). I participate in strength and flexibility activities one or two days per week.	Log entries indicate I am active for at least 60 minutes for 2–4 days per week, with less than 10 minutes per session spent in vigorous activities. I do minimal flexibility or strength activities.	Log entries indicate I am active for 30 minutes 3–5 times per week. I do not participate in strength or flexibility activities.
<b>Goal Setting (Outcome D)</b>	Records indicate that physical activity levels and goals to increase fitness have been met.	Records indicate that physical activity patterns have been tracked and comments indicate goals have been set/met.	Records indicate that physical activity patterns have been recorded but reflection is minimal.	Records indicate that physical activity patterns have been entered separately and goals have not been established.
<b>Active Living in the Community</b>	Activity choices are varied and demonstrate commitment to physical activity within the school and community.	Activity choices indicate some variety of activities that include community involvement outside of school.	Activity choices are few and there is sporadic use of community opportunities.	Activity choices indicate minimal involvement outside of physical education class.

My activity assessment indicates I am at \_\_\_\_\_ (indicate level).

- Do you meet, exceed or fall below the recommended 30–60 minutes of daily activity?
- Are you more or less active on the weekends?
- What activities do you enjoy most?
- What influences do others have on your activity level?
- What are the barriers that keep you from being more active?
- Is it possible to remove some of the barriers and if so, how?
- What strategies can you adopt to increase your level of activity?

## Goal Setting Organizer

Name: \_\_\_\_\_

Date: \_\_\_\_\_

When creating a goal for physical activity ask yourself: **Is your goal**

- ☐ Specific?
- ☐ Measurable?
- ☐ Achievable?
- ☐ Rational?
- ☐ Targeted?

Complete the following sentences.

My fitness goal is to \_\_\_\_\_

\_\_\_\_\_

The potential obstacles or barriers to achieve my goals are \_\_\_\_\_

\_\_\_\_\_

I will overcome these barriers by \_\_\_\_\_

\_\_\_\_\_

I will know if I am successful when \_\_\_\_\_

\_\_\_\_\_

To reach my goal I will \_\_\_\_\_

\_\_\_\_\_

I chose this goal because \_\_\_\_\_

\_\_\_\_\_

If I was going to do something different, it would be \_\_\_\_\_

\_\_\_\_\_



## ♥ 7—How do I create my own physical activity program?

### Physical Education Learning Outcomes



#### Benefits Health:

Functional Fitness B  
(10–30)–2, B (10–30)–3



#### Do It Daily...For Life:

Effort D (10–30)–2

Goal Setting  
Personal Challenge  
D(10–30)–6

### Learning Activity

Students create personal physical activity programs based on their current fitness levels. Students' fitness levels will be compared with levels achieved after creating and following a regular physical activity program.

### Key Understanding

Students who can evaluate their own levels of fitness are better able to maintain a regular personal record of their own fitness profiles. Fitness results are most beneficial when used to meet personal health and fitness goals rather than for comparison with a standardized assessment measure. The basic principles of training include frequency of activity, intensity of activity, and time and type of activities. This is referred to as the FITT formula. The FITT formula provides a framework to assist in the design of personal fitness programs.

### Background Information

Functional fitness as it is used in this resource includes three dimensions of fitness as identified by the Public Health Agency of Canada in the *Physical Activity Guide*: cardiovascular endurance, flexibility and strength. These components are necessary for the basic health of all individuals.

Endurance is a measure of how well the heart, blood, blood vessels, lungs and respiratory system are able to transport oxygen and necessary fuels to muscles during continuous exercise. Cardiovascular training also makes the heart muscle stronger, which means everyday activities are not as demanding. The suggested frequency for endurance activities is four to seven times a week, e.g., walking, participation in physical education, organized exercise programs, recreational sports.

Flexibility refers to the range of motion possible for various joints of the body. Flexibility is important for injury prevention. The suggested frequency for flexibility activity is four to seven times a week, e.g., gentle reaching, yoga, bending and stretching of all muscle groups.

Strength activities are those that work muscles against resistance, e.g., pushing or pulling to open a heavy door. Strength activities help muscles and bones stay strong, improve posture and help prevent diseases like osteoporosis. The suggested frequency of strength activities is two to four

## ♥ 7—How do I create my own physical activity program?

times a week, e.g., heavy yard work, resistance training. Strength can be broken down further to include both muscular endurance and muscular strength activities. Both activities are important as muscular strength assists with the maximal pulling force of a muscle or muscle group, and muscle endurance allows muscles to contract repeatedly or sustain a contraction.

### Equipment/Materials

- Measuring tapes, three or four stop watches, clock with a second hand, heart-rate monitors (if available), grip-strength dynamometer (if available) meter stick, music, blocks/bean bags for agility run, variety of sports/game equipment, skipping ropes.
- Student Worksheet 18: How Fit Am I? pages 61–62.
- Student Worksheet 19: Personal Activity Program, page 63.
- Student Worksheet 20: Fitness/Skill Challenge, page 64.
- Student Worksheet 21: Heart Health Circuit Station, page 65.

### Procedures

1. Discuss the principles of training and the FITT formula. See Appendix L, page 151 for more on the principles. Provide opportunities for students to experience a variety of fitness assessment activities, e.g., a two-kilometre run/walk to measure endurance, a sit and reach test to measure flexibility. See Appendix M, page 152 for sample assessment tests. Assist students in understanding the actual purpose of each fitness assessment. Connect student learning to the fitness principles of frequency, intensity, time and type.
2. Copy and distribute Student Worksheet 18: How Fit Am I?, pages 61–62. Help students select and record fitness assessment activities for each category of the worksheet. Students can complete the remainder of their worksheets at home. Encourage creativity.
  - Working in pairs or small groups, students demonstrate their personalized functional fitness appraisal tests to each other and record their current level of fitness for each test.
  - At regular intervals during the physical education program, require students to record their levels of fitness according to their How Fit Am I? worksheets.

## ♥ 7—How do I create my own physical activity program?

- Encourage students to select activities that are enjoyable and set individual goals to improve each component of fitness. Caution students to be realistic when setting goals but encourage them to challenge their current fitness levels.
3. Copy and distribute Student Worksheet 19: Personal Activity Program, page 63 during a class scheduled in a fitness facility. The strength component of the program is primarily dependent on the use of body weights, elastic resistant bands, strength and fit balls.
  4. Copy and distribute Student Worksheet 20, page 64. Have students create a Heart Health Circuit as a homework assignment, individually or in groups. Students will post and set up their circuits on the designated day for physical education.

Student-created cardiovascular circuits can also be used for warm-up during physical education class. Have students rotate to three stations for approximately two minutes each, or use one student-created circuit in each class.

Establish a theme for the circuit stations, e.g., survival, boot camp or kids play. If going outdoors, put the circuit cards in plastic sleeves and tape them to pylons.

5. Incorporate the Student Worksheet 21: Fitness/Skill Challenge, page 65 on days that work with your existing physical education schedule.
6. Assign students the task of creating a fun circuit in an outdoor environment near their homes.
7. Explore other aspects related to students' functional fitness, e.g., power, balance, agility, coordination, speed and reaction time. What other aspects of fitness are necessary to perform well in specific sports or activities, e.g., high performance tennis, shovelling snow, snowboarding? How could these aspects of fitness be measured?

## ♥ 7—How do I create my own physical activity program?

### Heart Healthy Tips

- Integrate fitness assessment activities with regular learning activities in physical education classes. For example:
  - integrate strength activities, e.g., push-ups, dips, plank, position holds, wall sit, crunches, into warm-up activities
  - for a cardiovascular endurance workout, create a two to three km school running course
  - use stretches for the cool down portion of the class.
- Avoid comparing fitness scores. There are many significant hereditary and environmental factors involved in a person's personal fitness level. It is best to help students strive toward a personal best rather than encouraging them to reach the 100<sup>th</sup> percentile on a normative chart or compete with other students in fitness activities.
- Encourage students to use fitness assessments that can be done at home and in the community.
- A self-produced training program can help students develop the confidence to manage their own health and fitness when they leave school.

### Student Inquiries

These questions will help lead students to new inquiries.

- How can I do my own assessments if I'm not comfortable doing assessment tests in front of others?
- How do I carry on with physical activity when I no longer have physical education?
- Why don't I look like a body builder?
- Will I build muscle mass and look like I have big muscles?
- How long does it take to get fit?
- How do I know if I'm fit?
- What happens if I miss participating in physical activity for a week or two?
- Do I need to do a fitness test to know if I am fit?
- Is it important to compare myself to others in class?
- What is the best physical activity program to increase my heart health, overall activity level and strength?

## How Fit Am I?

### Evaluate your own level of fitness

This activity allows you to create your own collection of assessments to measure your functional fitness. You can use assessments done in class, existing assessments or be creative and create your own tests. Include a brief description or diagram of how each test is performed. During physical education classes you will administer and record these self-tests to determine your current level of fitness. You will follow-up with the same assessment post-program to check for improvements. Avoid any type of movement that puts you at risk of injury.

There are many genetic and personal factors that affect fitness levels. Avoid comparing your scores with others or with an outside standard. Fitness results are most beneficial when used to meet your health needs and improve your own personal fitness. Strive for your own personal best.

### My Fitness Assessment

Tests to determine fitness level	Date:	Date:
Endurance Assessment:	Pre-program Results	Post-program Results
•		
•		
•		
•		
•		
Flexibility Assessment:		
•		
•		
•		
Strength Assessment:		
•		
•		
•		

- The components of functional or health fitness are: endurance, flexibility and strength.
- Basic principles of training – frequency, intensity, time and type of activity (FITT).



## Student Worksheet 18 (continued)

The FITT Formula outlines four essential ingredients in the development of each area of fitness. Consider the FITT Formula when planning your physical activity routine. Your FITT Formula should be based on your own personal physical activity goals.

- **Frequency** – How often you are active? Find a routine that will fit with your schedule and stick with it.
- **Intensity** – How hard is your activity? Use a variety of intensities, as well as your perceived level of exercise scale to exercise at a comfortable but challenging level. Each person's right level of intensity is individual. Incorporate moderate to vigorous activities into your routine four to seven times a week.
- **Time** – How long you are active? Time is dependent on effort and intensity. See the Physical Activity Guide recommendations at <http://www.paguide.com>.
- **Type** – What type of activity will you choose? Combine a variety of activities in your routine depending on your goals, paying attention to strengths and weaknesses.

The Physical Activity Guidelines recommend:

- endurance four to seven days per week
- flexibility four to seven days per week
- strength two to four days per week.

Accumulate 30–60 minutes of activity of varying intensities every day. A minimum of 30 minutes should be moderate to vigorous activity most days of the week.



# Student Worksheet 19

**Personal Activity Program** Name: \_\_\_\_\_ Class: \_\_\_\_\_

*This worksheet is recommended for use in a fitness facility.*

**rep** = repetitions, e.g., 10; **set** = number of sets of repetitions, e.g., 3 sets of 10 repetitions; **res** = resistance, e.g., 10 kg;  
**ave** = average heart rate; **int** = intensity, e.g., Heart Zone 1–5 or verbal description, e.g., vigorous

Date:	rep			set			res			rep			set			res			rep			set			res		
<b>Strength</b> 2–4/week:																											
1																											
2																											
3																											
4																											
<b>Flexibility</b> <b>Activity</b> 4–7/week:																											
1																											
2																											
3																											
<b>Endurance:</b>	time	ave	int	time	ave	int	time	ave	int	time	ave	int	time	ave	int	time	ave	int	time	ave	int	time	ave	int	time	ave	int
1																											
2																											



## Heart Health Circuit Station



Name: \_\_\_\_\_

### Learning Outcome: Plan, assess and maintain personal fitness activity

You and members of your physical education class are the top fitness professionals in the country. With a partner, design a cardiovascular circuit station. The station can be designed for individual or partner participation. The circuit needs to be fun, safe, challenging and raise participants' heart rates. Work the big muscles in an activity that can be maintained for a few minutes. The circuit card should include the name of the activity, a diagram/illustration, and concise instructions.

Background: Heart disease is the number one killer in North America. One of the main risk factors for many chronic diseases, such as diabetes, cancer, and heart diseases, is inactivity. The health of two-thirds of Canadians is at serious risk due to dangerously inactive lifestyles (CFLRI, 2000).

Date:										
Name of Circuit Station	Reps	HR	Reps	HR	Reps	HR	Reps	HR	Reps	HR

**Reps** = number of repetitions of a specific activity to be performed at each station, e.g., bicep curls – 10 reps of lifting 10 lbs.

**HR** = heart rate (taken with HR monitor or manually by counting the pulse for 6 seconds  $\times$  10)

## Fitness/Skill Challenge

Partner 1: \_\_\_\_\_ Partner 2: \_\_\_\_\_

### Learning Outcome: plan, assess and maintain personal fitness

- ✓ List the circuit stations in which you will participate, along with today's date.
- ✓ Work with a partner to enter the required information on your worksheet after completing each station.
- ✓ Go for a personal best by trying to improve times or the number of repetitions completed.
- ✓ Measure each other's progress over time. Add your own activities for 10–17, e.g., two-km run, dips, continuous juggle with soccer ball, number of basketball shots in one minute, wall sit, plank, arm wrestle, chin-ups, chest press.
- ✓ Include challenge for endurance, flexibility and strength components.

Date: _____	Date: _____		Date: _____		Date: _____	
Circuit Station Activity	1	2	1	2	1	2
1. Plank position holds						
2. Vertical Jump (Record distance achieved)						
3. Standing Long Jump (Record distance achieved)						
4. Crunches (modified sit-up) (Record maximum # repetitions)						
5. Stork Balance, 1 foot (eyes closed, no hopping); (Record maximum time held)						
6. Mountain Climbers (Record maximum # repetitions)						
7. Skipping (Record maximum # of skips in 1–2 min.)						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						

## ♥ 8—How can we share our understanding of heart health with the community?

### Physical Education Learning Outcomes



**Benefits Health:**  
Functional Fitness B  
(10–30)–2



**Do It Daily...For Life:**  
Active Living in the  
Community D (10–30)–  
8, D (10–30)–9

### Learning Activity

Students share their understanding of heart health with the community. Student activities could include a Heart Health Fair or written assignment on health benefits related to heart health.

### Key Understanding

Education is a key component in helping reverse increasing rates of chronic heart disease. Helping students improve their personal lifestyle practices is one way schools can make a societal change in health behaviours. Student learning can be enhanced through active, hands-on engagement in activities that communicate heart-health messages to others.

### Background Information

Strong evidence exists that physical activity contributes to the overall well-being of individuals. People of all ages can substantially improve their health and quality of life by including a moderate amount of physical activity into their daily routines.

*"Participation in physical activity contributes to physical, mental and social well-being providing benefits to the individual and community." Alberta Education K–12 Physical Education Program of Studies, 2000, p2.*

### Equipment/Materials

- Student Worksheet 22: Heart Health Fair, Draft Submission, page 71.

### Procedures

#### Heart Health Fair

1. Have students work in groups of three or four to create interactive displays for a Heart Health Fair. This could be an interdisciplinary health fair including displays by students in physical education, locally-developed activity courses, e.g., sports medicine, science, math, and Career and Life Management.

When hosting a Heart Health Fair for the public, ensure stations requiring vigorous activity consider participants' health. To avoid potential risk, all community members should complete a PAR-Q, Physical Activity Readiness Questionnaire. See Appendix N, page 153, for the PAR-Q & You form. If any questions are answered YES, participants should see their doctor before proceeding with vigorous activity.



## ♥ 8—How can we share our understanding of heart health with the community?

Interactive display suggestions are listed on pages 67–69.

2. Once students have chosen their stations, have them publicize the event with posters. These could be posted on vending machines and other areas frequented by students and staff.
3. Discuss the assignment in a physical education class and have students begin thinking of displays they could present in an interactive format. Provide a week for students to organize their teams and discuss possible projects, begin the initial draft of their project proposal and delegate who is going to take responsibility for various aspects of the project. Students can summarize their plan using Student Worksheet 22: Heart Health Fair, Draft Submission, page 71.

### Interactive Display

- A. Invite community fitness professionals to mentor students as they create their cardiovascular stations. Topics could include the following.
  - Show how the heart responds to physical activity.
  - Show how the heart rate responds to different stimuli, such as stress, caffeine or a cold.
  - Create a survey that includes physical activity questions, such as:
    - how often are you active
    - in what activities do you like to participate
    - how often you participate in vigorous activity?After completing the survey, students can compare participants' answers to *Canada's Physical Activity Guide to Healthy Active Living* and provide feedback on the guidelines.
- B. Have students invite participants to engage in a variety of cardiovascular activities organized by students. A fitness professional should be present to assist students with any fitness assessment type of activities. Using heart-rate monitors increases the accuracy of results.
  - One-minute Heart-rate Recovery  
Participants do moderate activity for approximately two minutes and note their exercise heart rates with heart-rate monitors or pulse palpitation. Have participants rest for one minute and take their heart rates again. The difference between these two measurements is one-minute recovery.

## ♥ 8—How can we share our understanding of heart health with the community?

Results can be recorded and students can interpret results with participants.

- **Resting Heart Rate**  
Participants have their heart rates taken in a horizontal position, while sitting and while standing. In each case, encourage participants to relax and bring their heart rate as low as possible. Record findings. This activity works best using heart-rate monitors. Students can interpret results with participants.
- **Heart IQ**  
Students make up quizzes or go online to locate samples. See Resources, pages 166–168. Participants then participate in a mini-quiz to test their heart IQ.
- **Stress and Your Heart**  
Students obtain participants' heart rates prior to exercise and post-exercise for the following activities. Identify which of these activities help lower participants' heart rates.
  - yoga
  - breathing exercises
  - listening to soothing music
  - alternate muscle contraction for relaxation effect.
- **Calculating Max Heart Rate and Training Zones with Sub-maximal tests**  
Students guide participants through a variety of activities to determine their estimated maximum heart rates. Students identify and explain participants' training zones determined from their maximum heart rates.
- **Talk test**  
Participants note the highest heart rate they can sustain during physical activity while carrying on a conversation without any problem. Students then interpret results with participants.
- **Eating for your Heart**  
Students promote the importance of proper nutrition for the health of the heart. Topics could include:
  - reading food labels
  - types of fat
  - salt
  - carbohydrates: simple versus complex
  - fibre
  - five a day – fruit and vegetable servings
  - fast food

## ♥ 8—How can we share our understanding of heart health with the community?

- beverages, e.g., caffeine, sport drinks, protein shakes, water
  - vending machine attack
  - food serving size: nutrition label serving vs. food guide serving
  - fad diets
  - development of a school nutrition policy.
- Record ideas for inclusion on policy for food served in the cafeteria, pop and vending machines. For input from a local dietician, contact the local health authority.

### Classroom Written Assignments

1. Students complete written assignments on the health benefits related to heart health and display them at a parent–teacher night or open house. See Appendix O, pages 154–163 for ideas for written assignments.

### Heart Healthy Tips

- Heart Health Fairs could be scheduled during school hours, open house, lunch hour or during heart month, in conjunction with a major event at the school. Involve other members of the staff and organizations or professionals within the community, e.g., Heart and Stroke Foundation, local fitness centre, regional health unit, cardiologist, physiologist and dietician.
- Brainstorm ways to share project information within the school and community.
- Ask students to consider heart health assessments that are less invasive than cardio-endurance testing. This could include:
  - participating in physical activity of any kind, including simple games
  - quitting smoking
  - eating healthy foods
  - reducing stress
  - contacting volunteers from local emergency medical services to do blood pressure/heart rate testing.
- This may be a great opportunity to collaborate with the school nurse or other community resources to develop station ideas.
- Brainstorm how students might be able to share their project information within the school and community.

## ♥ 8—How can we share our understanding of heart health with the community?

### Student Inquiries

These questions will help lead students to new inquiries.

- How can I share my understanding of heart health and fitness with my family members?
- What type of sharing will have the greatest impact?
- Does increased knowledge really change behaviour?  
How will I know?
- What other agencies are involved in heart health in my community?
- What message can community partners share to support my understanding of heart health and fitness?
- What careers involve working in the area of heart health and fitness?
- What community partners can we invite to participate in the fair?
- What groups in our area may benefit from attending our fair, e.g., junior high, senior group, community pool members?

## Heart Health Fair Draft Submission

Name of Interactive Display: \_\_\_\_\_

TEAM MEMBERS	RESPONSIBILITIES
1.	
2.	
3.	
4.	

Key understanding and relationship to heart health:

\_\_\_\_\_

\_\_\_\_\_

Explanation of the activity display: What will participants be doing?

\_\_\_\_\_

\_\_\_\_\_

Equipment required:

\_\_\_\_\_

\_\_\_\_\_

Location requirements: plug-ins, space, access to stairs, Internet access

\_\_\_\_\_

\_\_\_\_\_

Diagram of display set-up:

\_\_\_\_\_

\_\_\_\_\_

Expert consultation: do you need to contact experts in the area for more information?

\_\_\_\_\_

\_\_\_\_\_

Other:

\_\_\_\_\_

\_\_\_\_\_

(use reverse side of page if required)





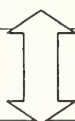
## Appendices

# CAREER AND LIFE MANAGEMENT (CALM)

## Program of Studies

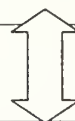
### Aim

The aim of senior high school Career and Life Management (CALM) is to enable students to make well-informed, considered decisions and choices in all aspects of their lives, and to develop behaviours and attitudes that contribute to the well-being and respect of self and others, now and in the future.



### General Outcome 1 – Personal Choices

*Students will* apply an understanding of the emotional, psychological, intellectual, social, spiritual and physical dimensions of health, and the dynamic interplay of these factors, in managing personal well-being.



### General Outcome 2 – Resource Choices

*Students will* make responsible decisions in the use of finances and other resources that reflect personal values and goals, and demonstrate commitment to self and others.



### General Outcome 3 – Career and Life Choices

*Students will* develop and apply processes for managing personal, lifelong career development.

The Learning Opportunity #8 How can we share our understanding of heart health with the community? is connected to the CALM program. These activities identify the achievable outcomes in a chart form.

## Questions to Guide Inquiry-based Learning

Inquiry possibilities for students in physical education classes could include the following.

- What is my resting heart rate and what does it mean to my fitness?
- What is my maximum heart rate for various activities? What is the maximum heart rate of others who are my age?
- What is the range of maximum heart rates in my class, school, city or the world?
- Is there any formula that can accurately predict maximum heart rate? Can we create our own maximum heart-rate formula?
- What methods appear to be best for determining maximum heart rates in youth and children?
- Am I receiving a health/fitness benefit from participating in physical education?
- What are the barriers that prevent me from being more active? How can these barriers be overcome?
- What action projects could I initiate to increase the physical activity of my peers, family and society? Could we make them reality?
- What are the correlations between my own and my parents' levels of physical activity?
- How does nutrition, sleep, stress, smoking and caffeine impact my heart health?
- What methods or strategies are most beneficial for me in managing life's stresses, e.g., breathing exercises, visualization, music, yoga, exercise, positive self-talk?
- What does it feel like to be working in each of the five training zones? What words can I use to describe how I feel in each zone? How soon do I notice a change in my physical and mental feelings in each of the five training zones?
- How can I measure my own cardiovascular fitness? How does my cardiovascular fitness change over the years? What types of cardiovascular assessments do I enjoy most?
- What types of activities will I include in a personal fitness test that addresses the aspects of functional fitness (cardiovascular, flexibility, muscular endurance, muscular strength)?
- Am I active enough for optimal growth and development?
- How much do I really move in the course of a day? How can I measure this?

## Pedometers

A pedometer is a motion sensor that detects vertical movement of the body which is then expressed as steps taken during walking or running. With the added input of stride length, it can calculate distance walked and approximate calories burned. Students can learn how much movement they complete in a day as a result of all their activities by keeping track of their steps. Students can set and achieve goals through the use of pedometers. They are simple, inexpensive, lightweight and easy for students to use and interpret.

Pedometers are available for purchase from the Learning Resources Centre and many equipment suppliers. Purchase a class set to share within the school and promote different types of student activities from walking programs to physical education classes in order for students to track their results.

Most pedometers are designed to be worn on the waistband aligned directly above the knee. The pedometer should be positioned as straight as possible, not leaning forward, backward or sideways as that will affect the accuracy of the mechanism that counts the steps. Pedometers are equipped with belt clips, however adding a safety strap prevents loss and damage due to dropping. Pedometers are durable but a fall on a hard surface can cause damage.

### How to use a pedometer

- Recording the number of steps students take during an average day allows them to track their progress or establish a daily average.
- Most pedometers are electronic and are activated when the foot hits the ground, producing an impulse that transfers to the pedometer case recording a step. Just like a clock, there is a pendulum arm that must be in an upright position to work properly.
- To test a pedometer to see that it is working properly:
  - open the face of the pedometer and reset the reading to 0
  - take 20 normal walking steps
  - open the face and read how many steps were recorded
  - if the reading is 20 (or close to it), it is working fine
  - if not, test again.
- Instruct students to put pedometers on in the morning, wearing them while going to school, playing with friends or walking the dog and take them off at night before going to bed.
- Pedometers should not be worn during extracurricular sport activities.
- Pedometers should be kept dry.

### Average Steps

- Eight–10 year olds: 12,000–16, 000 steps per day
- Young adults: 7,000–13,000 steps each day

### Resources

For more information on pedometer use, see “WellSpring” by the Alberta Centre for Active Living—<http://www.centre4activeliving.ca/Publications/WellSpring/index.html#03Spring>.

The Spring 2003 edition is dedicated to pedometer use with articles such as:

- Watch Your Steps: Pedometers and Physical Activity
- How Do Pedometers Work?
- The 10,000 Steps Rockhampton Physical Activity Project
- Buyer Beware: The Pros and Cons of Pedometers.



## **Strategies to Promote Cardiovascular Benefits**

Below are some strategies for increasing cardiovascular endurance activities in physical education classes.

- For beginning classes, students should move as soon as they enter the activity area. Provide a variety of equipment to assist them. Stress the importance of safety, and awareness and respect of other students' physical spaces.
- Have sufficient equipment available for every student to minimize wait time and line-ups.
- Create small teams to increase the opportunity for more movement by more students, e.g., three-team volleyball creates more opportunities than six-team volleyball.
- Create a work-to-rest ratio of 2:1 when it is not conducive for the entire class to move at the same time. A relay team with two people will create twice as much movement opportunity as a relay team of four.
- Modify the rules or equipment so students increase the intensity of their activities, and can measure progress and achievement.
- Be solutions orientated with students so they can identify ways to create more movement time, and less management and transition time.

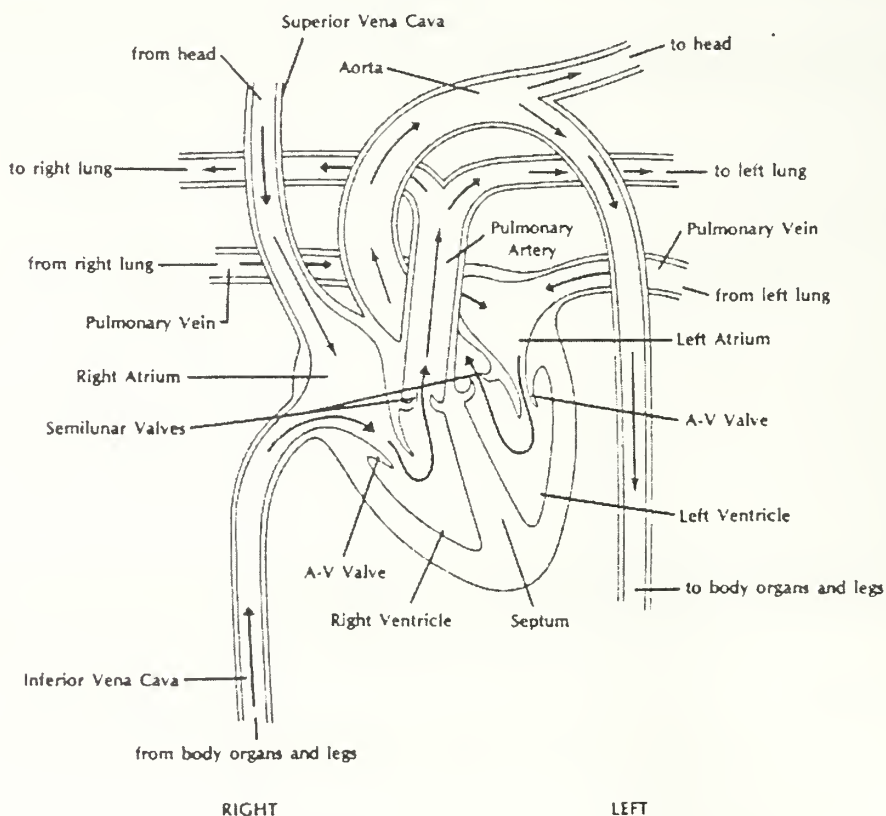
## The Heart Muscle

The heart is the most important muscle in the body. It is an efficient and resilient pump making blood flow through the body for an entire lifetime.

The heart muscle itself is made up of four chambers, two valves and two separate pumps. There are two sides to the heart allowing it to function as a dual action pump. The heart's job is to contract and force blood into the chambers, through the valves, to send blood to the lungs for oxygen, and then back to the heart through valves and chambers, to be pumped out to all the cells of the body.

This rhythm of a complete heartbeat is driven by electrical activities originating from the pacemaker, a bundle of specialized nerve tissue that receives messages. It independently creates its own electrical signals beating away until there is a need to make a change in the heart rate, measured in beats per minute (bpm). For example, if cells need more oxygen, the brain automatically speeds up the contraction rate of the heart, which in turn increases blood flow.

Exercise would induce such a need for more oxygen, increasing the heart rate in order to supply the harder working cells in the muscles and lungs. Improving your fitness level allows your heart to work at high levels longer and more efficiently.



## Tips on Taking Your Heart Rate while Exercising

**Keep moving** while taking your heart rate. Your heart rate will drop within 15 seconds if you stop moving.

### Where to find your pulse



**Wrist:** Find the tendon running down the centre of the inside of your arm. Take your pulse on the thumb side of that tendon. Use your index and middle finger to take your pulse, not your thumb as there is also a pulse in your thumb.



**Neck:** Take your pulse on the carotid artery on either side of your Adam's apple. Your carotid artery is pressure sensitive so don't press too hard and don't try to take your pulse on both sides at once.

## Determining Your Heart Rate

### Using radial or carotid pulse (palpation method)

You will need a stop-watch, watch or wall clock that displays time in seconds. Encourage students who are using the palpation method to use their own watches.

Have students practise taking their resting pulse first. If they are familiar with finding their pulse while sitting or lying quietly, it will be much easier to find during exercise when the heart is beating more vigorously: six-second count  $\times 10 = \text{bpm}$ , 10-second count  $\times 6 = \text{bpm}$ , 15-second count  $\times 4 = \text{bpm}$  (bpm = beats per minute).

If students have a hard time finding their pulse while exercising, have them find it before they begin exercising and draw an x on the pulse spot.

When gathering heart-rate data via palpation during exercise, use the six-second count instead of the 15-second count. During exercise, students will need to stop briefly to locate their carotid or radial pulse. Then they should be provided with a six-second count. Upon stopping physical activity, the heart starts to relax and the heart rate quickly slows down. If students count for 15 seconds, the heart rate will not be as accurate because of the recovery factor.

### Alternative methods for determining heart health information

Use the Perceived Intensity Scales on page 40 and/or the description of various intensities identified in the chart on pages 30–31 to help guide students in listening to their hearts.

## Heart-rate Monitor Parts and Their Functions

Heart-rate monitors pick up the electrical signals given off by the heart and report the average number of times the heart contracts in a minute. Heart-rate monitors typically consist of three parts:

- Chest belt—an elastic belt worn across the chest that holds the transmitter comfortably, yet firmly, in the correct position
- Transmitter—is attached to the chest belt, worn in front of the body with the label centred on chest and picks up the signal of the heart rate and transmits it to the right receiver
- Wrist Receiver—is similar to a wrist watch and is the receiver of the transmitter signals.

### Wearing Your Heart-rate Monitor

- Attach the transmitter to the elastic strap.
- Adjust the chest belt strap length to fit snugly; comfortably secure the strap around your chest just below the chest muscles and buckle it.
- Lift the transmitter off your chest and moisten the grooved electrode areas on the back.
- Check that the wet electrode areas are firmly against your skin and that the logo is in a central, upright position.

### Tip

Men – chest strap and transmitter should sit across the nipple line.

Women – chest strap and transmitter should sit just below the bra line.

See your heart rate manual for specific instructions.

### Care and Maintenance of Heart-rate Monitors

- Wash the transmitter regularly after use with mild soap and water. Dry it carefully after washing.
- Avoid dropping the receiver as this may break the crystal and buttons. Always put the receiver on first so it doesn't hit the floor. If already wearing a watch, place the receiver on the other wrist to reduce the possibility of any interference.
- Never store the transmitter wet. Sweat and moisture can keep electrodes wet and the transmitter activated, which shortens the battery life.
- Store the heart-rate monitor in a cool and dry place. If it is wet, do not store it in any kind of non-breathing material, such as a plastic bag or sports bag.
- Do not bend or stretch the transmitter. This may damage the electrodes.
- Keep the heart-rate monitor out of extreme cold (below  $-10^{\circ}\text{C}/14^{\circ}\text{F}$ ) and heat (above  $50^{\circ}\text{C}/122^{\circ}\text{F}$ ).
- Do not expose the heart-rate monitor to direct sunlight for extended periods, e.g., leaving it in a car exposed to sunlight.
- Dry the transmitter with a towel or soft fabric. Hard handling may damage the electrodes.

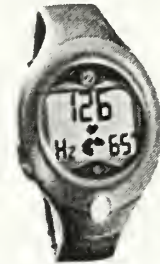
From Polar Heart Rate Monitor Manual



- If the heart-rate monitor is water resistant, do not operate the buttons underwater, as water pressure can cause the receiver to leak.
- For some models, battery changes need to be performed by an authorized dealer to maintain the warranty.
- Elastic straps can be washed by machine on the gentle cycle provided they are placed inside a lingerie mesh bag. Hang to dry. With high usage, this would be the protocol once a week.



Transmitter and elastic strap



Receiver

### How to Use Heart-rate Monitors

The heart rate provides an objective gauge of exertion for how hard the body is working. Heart monitors are devices designed for wear during strenuous exercise, and serve the purpose of measuring and recording the heart rate while giving instant feedback about the work level of the heart. Using a heart monitor helps prevent stressing the body too much and maximizes the efficiency of training while minimizing the opportunity for injury.

A strap, usually attached to the chest, continuously measures the heart rate during activity. This strap must have solid uninterrupted contact with the skin to operate correctly. Data is relayed to a receiver and provides feedback when the body is working outside the targeted heart-rate zone. Some monitors do not require chest straps, instead a finger touches the sensor to collect the heart rate.

Heart-monitor training can be effective when the information collected is used to design and implement a workout regimen tailored to the body and fitness level. To do this, an initial calculation of the various work-rate zones for the heart is made. Then, these zones are used to guide the work rate during workouts.

### Trouble Shooting Heart Monitors

Remember:

- moisten the electrodes
- adjust the chest straps to fit correctly
- place the receiver at least three feet away from another receiver to avoid cross-talk
- interference can also result from other electronic equipment, such as cell phones, wireless Internet, power lines and electronic consoles on cardio equipment
- position the wrist receiver and chest transmitter within one meter of each other
- the placement of the chest transmitter across the chest is important.





### Heart-rate Monitor Check-in/Check-out System

<b>HRM #</b>	<b>Name of user</b>
<b>1</b>	
<b>2</b>	
<b>3</b>	
<b>4</b>	
<b>5</b>	
<b>6</b>	
<b>7</b>	
<b>8</b>	
<b>9</b>	
<b>10</b>	
<b>11</b>	
<b>12</b>	
<b>13</b>	
<b>14</b>	
<b>15</b>	
<b>16</b>	
<b>17</b>	

Student should use the same monitor for each session.

# Leapfrog around the gym with a partner



# **Log roll the width of the gym with a tennis ball between your legs**



# **Jump rope 25 times in place**



# Wall Volley 20 times with a volleyball





# Pass a peach using your feet only



# **perform 20 line punches between two lines**



**With partners, place a ball  
between your backs and  
walk around the gym**



# HOSPITALITY NOODLES



# ***Make a push-up train by attaching as many people as you can in push-up position***





**DO a 3-legged gym  
around the partner  
with a partner**



**Walk or run  
backwards the length of the gym  
as fast as you can without falling**



# ***Jump rope 10 times with a ball between your knees***



# perform 20 step-ups for each leg a bench

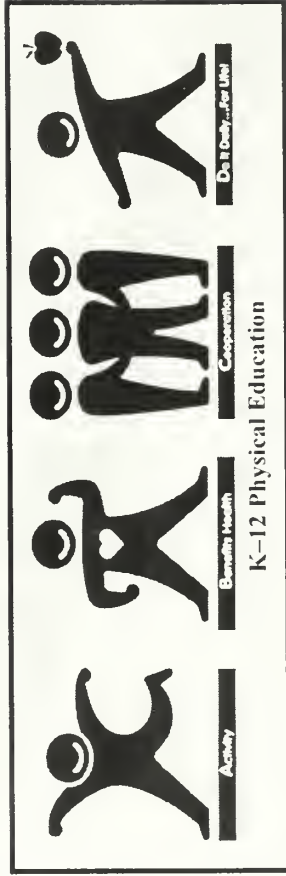


# Swinging a hoola-hoop around a body part 10 times in a row





# Startwheels 101



# **Jog around the gymnasium**



# Jumping Beans



**can to  
arms get verti  
gym as high  
skip around the  
swing you  
as a lift**



**Run around the  
room and touch  
every 90 degree angle**





**Using an elastic jump rope  
perform 20 - 2 foot jumps  
at ankle height without touching the rope**



# **Using a basketball, football and other object, shoot each through 5 hoops**



# From indicated line Pitch 3 objects into a bucket



# **Jump rope 20 times partitive times cons**

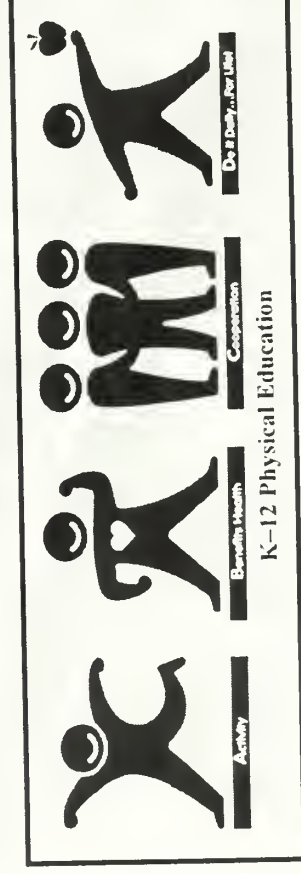


**Toss an object up,  
turn it. Try this  
catches cones  
times**





# ***Skip on one foot using a rope or a hoola hoop***



**While lying on your back,  
toss an object up  
and catch it 10 times  
consecutively**



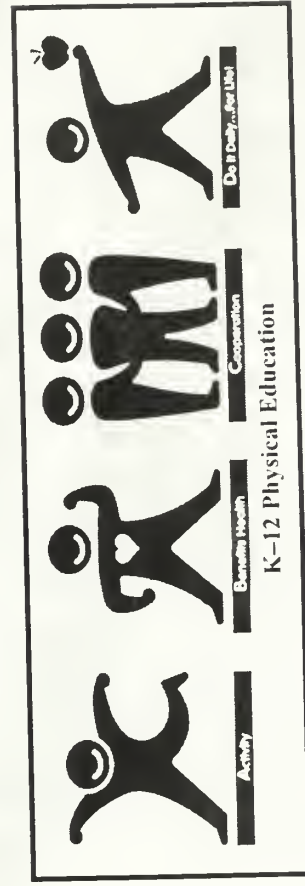
***In a wheel barrel position,  
carry your partner the width  
of the gym and way back  
places on the***



# ***Bounce a tennis ball around the gym using a paddle while moving***



# skipping rope around a the gyming rope skipping

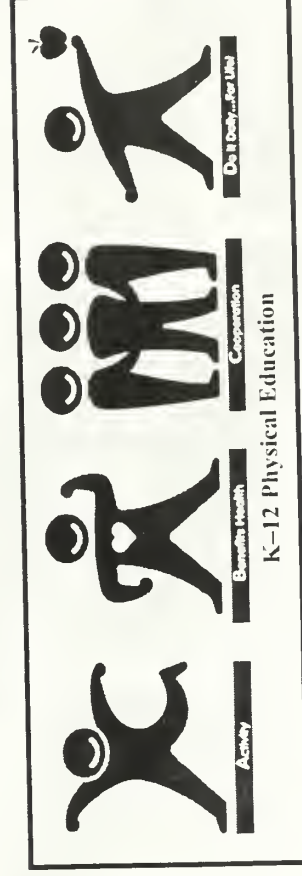




***Speed walk around the  
gym with a paddle  
ball balanced on a paddle***



**With your hands on each  
others' shoulders gym  
once around the partner  
skip by side with a partner  
side by side**



# ***a ball rally between yourself with a paddle and wally between and a partner***



***do 10 sit-ups at the height  
of the head behind  
the ball at the floor pass  
while the ball must be before  
the head***

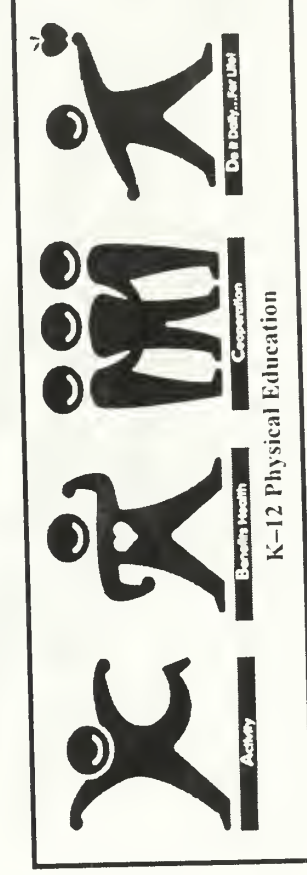


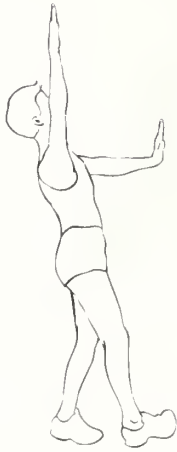
***On your own, with a  
partner or in a group  
part(s) between you can  
push mats as fast as pylons***





**With a partner, run around  
the gym partners liken  
the game partner you  
education about physical  
education**

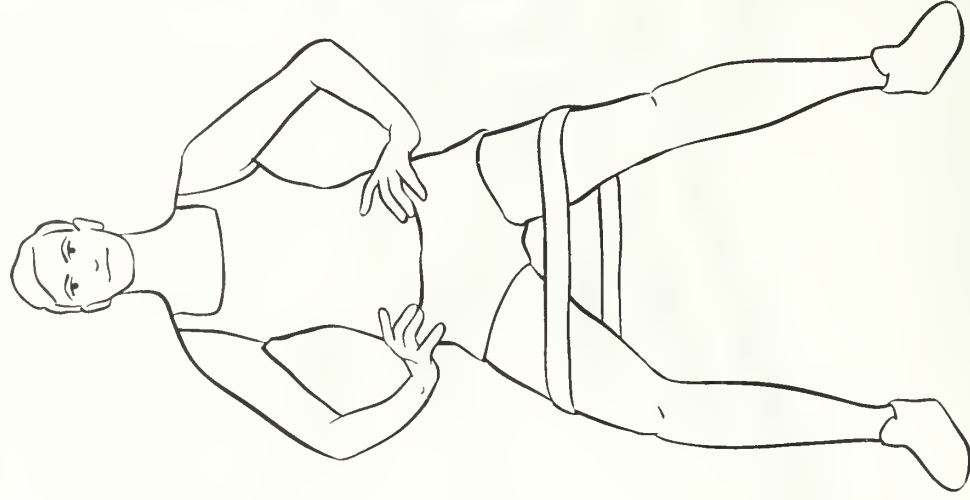




**The class makes  
a large circle,  
a large circle partner  
behind sit on  
stand behind  
and have the switch**



## Side-step Dyna Band Walk



Tie a 1–1 ½ metre length of rubber tubing or dental dam band around legs a few centimetres above the knees. Bend knees about 45 degrees and step with feet wide apart, keeping feet parallel and knees bent. Bring feet back together and continue walking to the side in a slight squat position. Keep hands on hips or, for a more advanced option, hold a weighted ball overhead or at chest height. Walk 13–15 metres in one direction, then stop and side-step back to the start, leading with the opposite leg (face the same direction). Repeat for 10–15 steps up to three times for each side.

**Modification:** Side step without the rubber tubing but carrying a weighted ball at chest height.

## Quadriceps Strength

Lie face up, placing rubber tubing or a rubberized band around the balls of the feet. Bend knees so they align with hips, heels together, feet separated and toes turned out. Hold the band with each hand so it's tight, with arms slightly bent. Contract the abdominal muscles, drawing hips and tailbone down toward the mat (A). Maintaining heel connection, inhale to prepare, then exhale and press legs out until they are straight (do not lock the knees) and at a 45-degree angle to the ground (B). Inhale while bending legs back to the start position. Repeat for 10–15 repetitions.



B





## Dead Bug/Abdominal Strength Walk

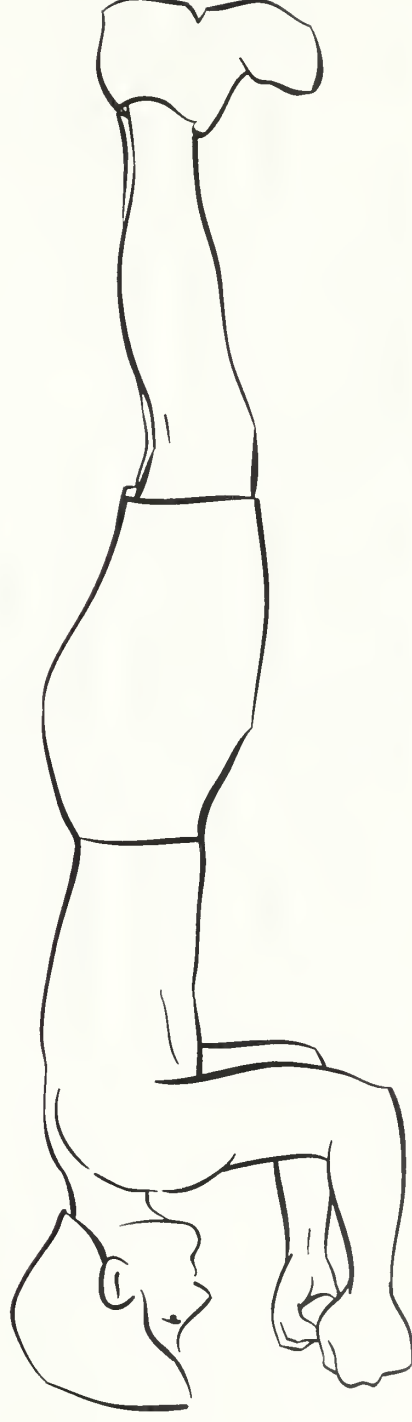
Lie on the ground with arms at sides. Contract abdominal muscles and slowly bring left leg in toward chest as right leg is lifted 15–20 cm off the ground. Switch legs, bringing right knee in and straightening left leg (keep it off the ground). Do three or four sets of 12 slow, controlled repetitions.

For an easier modification use one leg at a time.



## Plank

Get into a modified push-up position, resting the weight on forearms. Elbows should be positioned directly under shoulders. Body should form a straight line from shoulders to ankles. Simultaneously pull belly button toward spine and squeeze gluteal muscles tightly. Keep back flat, taking shallow breaths for 30–45 seconds. Rest 30 seconds and repeat twice.



## Staggered Leg Lift

Lie on left side, legs together in line with torso, shoulders and hips aligned. Rest head on left arm and place right hand in front of chest on mat for balance. Contract abdominals, then inhale and lift right leg to hip height (A). Exhale, lifting left leg to meet right, toes pointed (B). Continue to exhale as you lower both legs to mat. Repeat for 5–10 repetitions, then switch sides and repeat. To finish, stretch by lying on side, hug top knee in toward chest, holding stretch. Release and repeat on the other side.

A



B

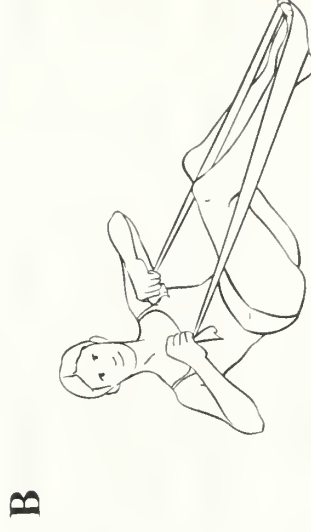
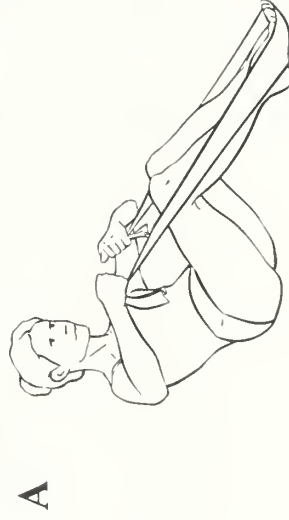


## Rollback with Obliques

Sit with knees bent, knees and ankles together, feet flat on the mat. Place rubber tubing or dynaband around balls of the feet, feet flat. Hold ends of the band, elbows bent, forearms in front of chest, palms facing in. A – Inhale to lengthen spine, exhale to roll hips away from thighs and send lower back toward mat. Inhale at bottom of movement and exhale as you rotate to one side, including arms.

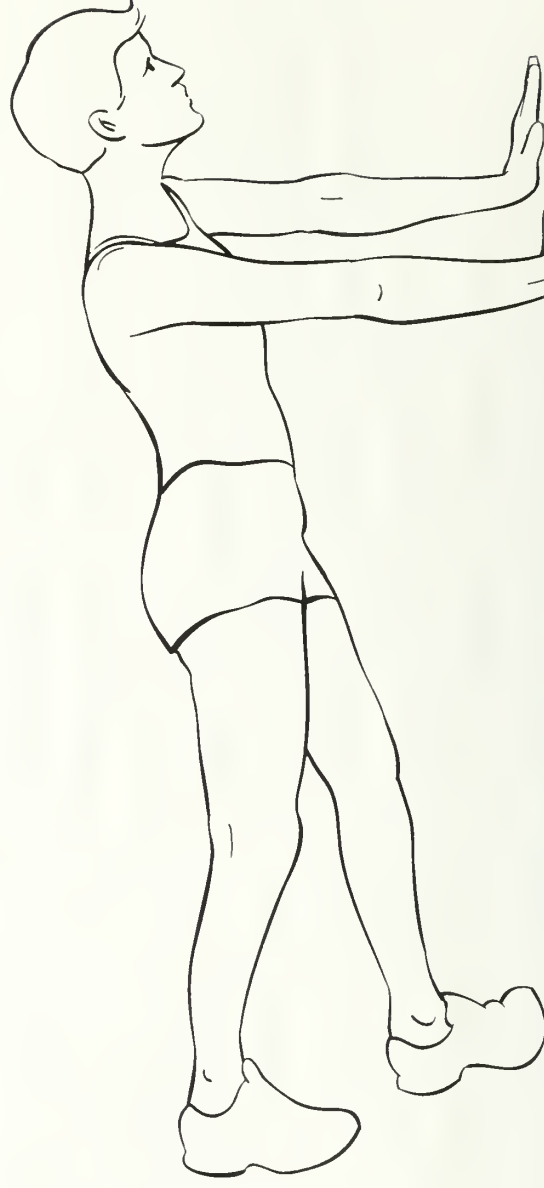
B – Inhale back to centre and repeat exhale up to starting position. Repeat for 5–8 repetitions, alternating sides.  
(1 rep = rotation to each side)

Modification: If not using rubber tubing, extend arms straight in front.



## Knee to Nose Plank

Balance on hands and toes, palms aligned under shoulders and body in a straight line. Lift right leg 8 cm and bring right knee in toward chest (not shown). Extend leg back out, lower it and repeat with left leg. Keep head in line with spine throughout. Simultaneously pull belly button toward spine and squeeze gluteal muscles tightly. Keep back flat, taking shallow breaths for 30–45 seconds. Rest 30 seconds and repeat twice.





## Yoga Boat Pose

Sit with knees bent and feet on the floor. Lift legs until they are at a 45-degree angle to the floor, arms extended, balancing on the tailbone and gluteal muscles. Hold for three to five breaths.

**Modification:** If unable to keep the back straight while in this position, bend the knees. If this hurts the back, allow hands to be placed on the floor behind hips.



## Toes to Sky Advanced Abdominal Workout

Lie on back with hips bent at a 90 degree angle and legs straight, pointing to the ceiling. Place arms so they are perpendicular to body, palms facing up. Lift pelvis off the floor while keeping legs perpendicular. Hold for five seconds (one repetition). Do a total of 10–15 repetitions.

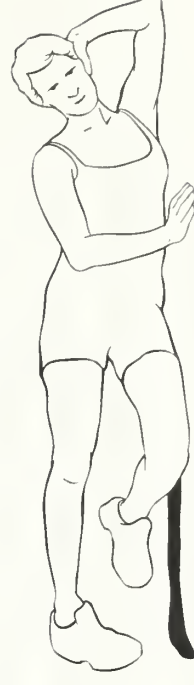
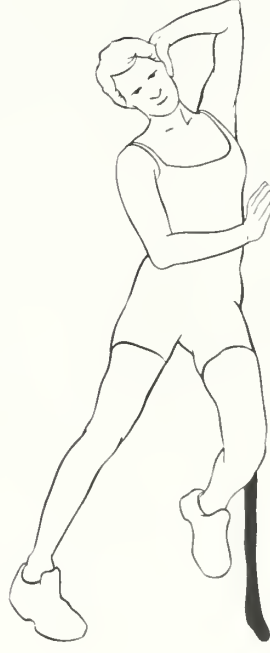
**Note:** This activity is an advanced movement and requires appropriate supervision.



## Lying Leg Lift

Lie on left side, head propped on left arm, bottom leg bent for balance, right hip slightly forward and right hand on the floor in front of body. Flex right foot and point toe down slightly toward the floor. Raise right leg (knee should be straight and facing front) until there is a contraction in the buttocks, leg and hip. Be careful not to rotate the leg inward or let hips fall back. Don't worry if the leg does not lift very high. The goal is to feel the contraction. Lower leg, without touching down and repeat.

**Variation:** Working from the same starting position as above, slowly pulse the top leg for three counts and then squeeze up on the fourth count. Do eight sets, then switch legs.



## Martial Arts Kick

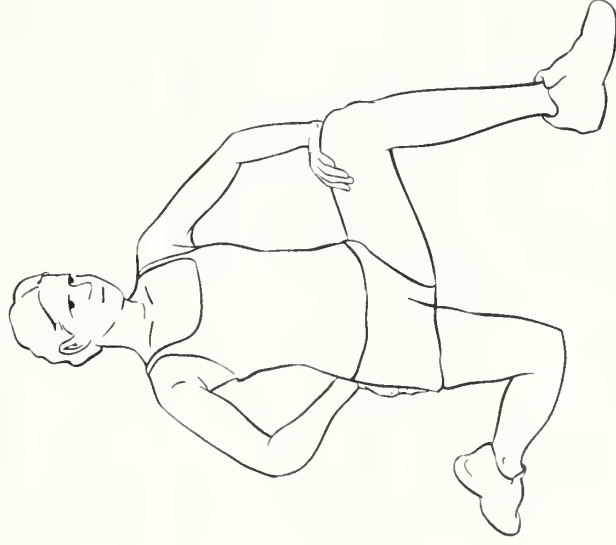


Slide right leg to the side, toe lightly touching the ground. Slightly turn left heel to face right foot and shift weight to left leg. Keeping left knee unlocked, lift right leg almost to hip level or as high as comfortable, with knee bent and foot flexed. Don't arch the back. Contract buttocks while kicking right leg out to the side, leading with heel, stopping just before leg is fully extended. Keep eyes on the extended foot while performing this move. Tap right leg back down to the floor keeping weight on left leg and kick again to the right. Repeat 10 times, then switch legs and repeat. Work up to 20 kicks per leg. Hold chair or wall for balance if necessary.



## Hip Flexor Stretch

Kneel on the ground and place left foot in front, knee above ankle. Contract abdominal muscles. Place left hand on leg and right hand on right gluteal muscle while pressing right hip forward. The stretch should be felt in front of the right thigh. Hold for 20–30 seconds, then switch legs.





## Triple Abdominal Attack

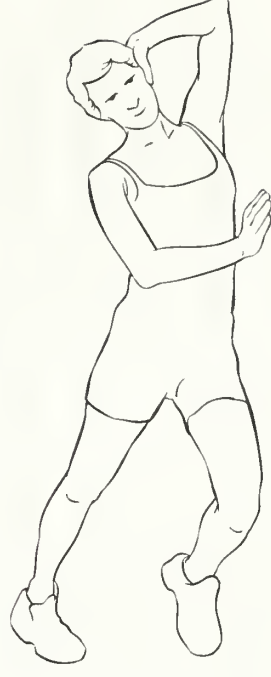
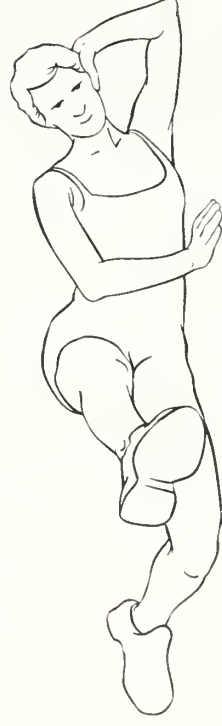
Lie on back bringing knees and feet in toward chest. Clasp hands together at the base of neck for support. On exhale, curl upper body off the floor, bringing elbows to knees (pictured). Keeping knees lifted and still, slowly lower upper body to the floor while inhaling. On the next exhale, curl upper body off the floor, bringing elbows to knees again. Keeping upper body lifted this time, lower toes toward the floor while inhaling and keeping knees bent. Lower back remains on the floor. On the next exhale, raise knees to elbows to begin the next repetition. Do 15–30 repetitions.

**Note:** This activity is an advanced movement and requires appropriate supervision.



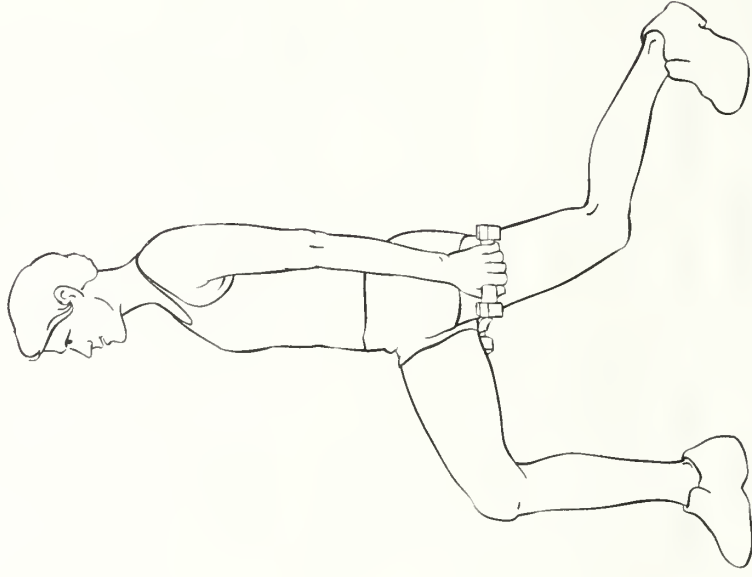
## The Pendulum

Lie on left side with left elbow bent, hand supporting head and right hand in front for support. Bend bottom leg slightly. Straighten top leg and tighten abdominals. Keeping the leg straight, bring top leg in front and flex foot. Slowly swing leg back behind, contracting gluteal muscles and pointing the toe, being careful not to arch the back. Swing back and forth 10–15 times using slow, controlled movements. Switch sides and repeat.



## Walking Mini Lunge

Step forward with right leg and bend right knee about 45 degrees, thigh not quite parallel to the ground. Rise up and lunge forward with left leg. Make sure knee is in a straight line over big toe. Walk 10–15 metres in one direction, then turn around and lunge-walk back to the start. Repeat once more in each direction. Hold dumbbells for added challenge.



## Triceps Dip

Sit tall on the edge of a sturdy chair or bench and wrap fingertips over the front edge. Make sure the chair/bench is secured against a wall to avoid slippage. Place feet on the floor in front with knees bent. Lift hips and butt slightly forward. Bend elbows about 90 degrees and lower hips toward the floor in two counts. (If it is painful in the shoulders, the elbows are bent too much or you may need to discontinue exercise.) Press up in two counts until elbows are straight. Do 10–15 repetitions.



## Squat Jump

Stand tall, knees slightly bent and feet shoulder-width apart. Tuck into a squat position, thighs parallel to floor, palms face down about 15–20 cm in front of toes and slightly wider than shoulder-width apart (picture A). Exhale kicking both legs out behind, landing on toes with legs fully extended (picture B). Simultaneously pull belly button toward spine and squeeze gluteal muscles tightly. Jump back into the tuck position, return to standing position, or add a two-foot jump then land to standing position. Caution: Do not let back sway downward. Tighten buttocks to maintain alignment.

A



B





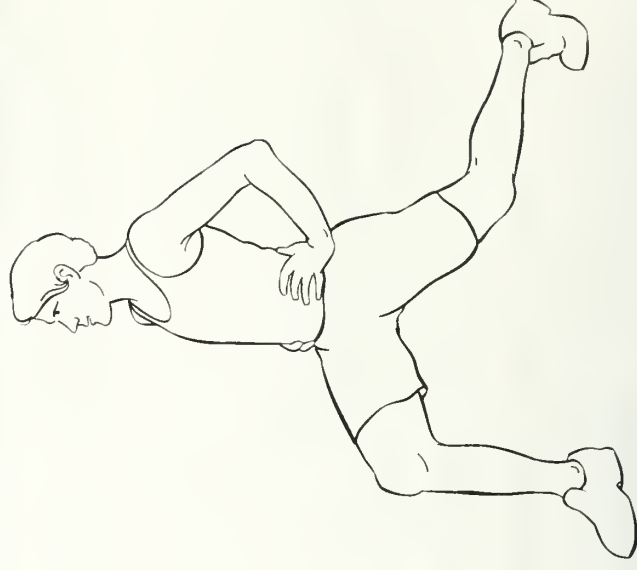
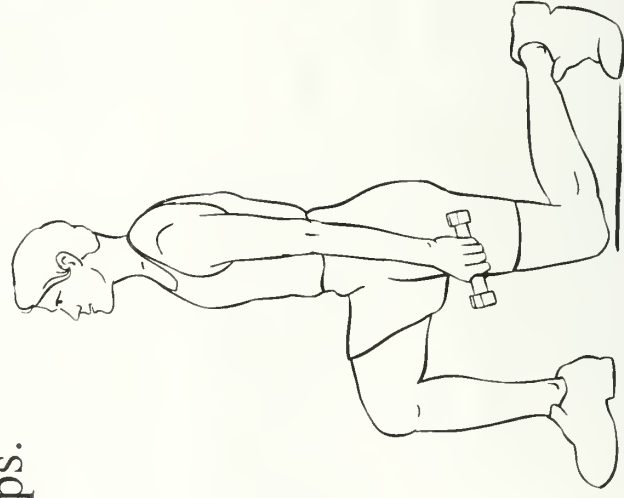
## Power Sit-up

Lie back with knees bent, feet flat on the floor and arms extended over the head. On exhale, use abdominal strength, not momentum, to slowly raise head, shoulders and torso off the floor until seated upright with arms extended forward (pictured). Lower to start position on inhale. Do 10–30 repetitions.



## Thigh-sculpting Lunge

Stand with feet hip-width apart, shoulders back, arms on waist unless using weights. Contract abdominals and step right leg forward about one metre. Lift left heel. Bend both knees until right thigh is parallel to the floor and, if comfortable, left knee almost touches the floor. Press right heel down to push up and stand. Switch legs. Continue as a stationary exercise for 20 repetitions or walk a set distance of at least 20 steps.

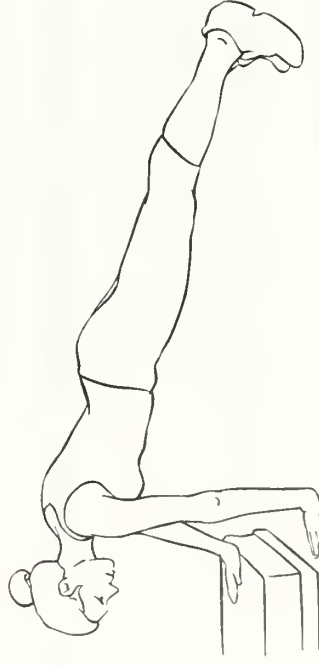


## Staggered Push-up

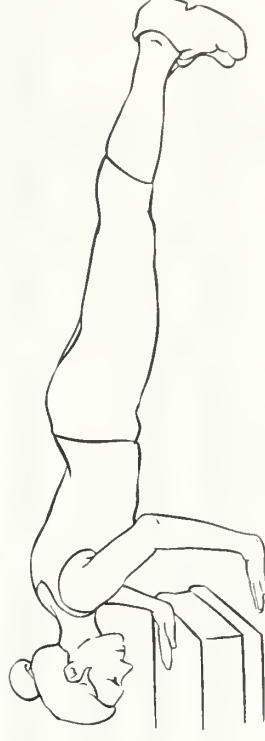
Begin in a push-up position, with hands and toes on the floor, shoulder-width apart. Place one hand on a step or stair with fingers facing forward. Keeping abdominal muscles tight, lower upper body and hips until face is about three cm from the step. Push back to starting position. Do 5–10 repetitions. Rest 30 seconds, switch hands and repeat.

**Modification:** Change the push-up position using knees as the contact position.

### Staggered Push-up A



### Staggered Push-up B



## Side-lying Bend

Lie on left side and place a dyna band around ball of right foot, knee bent at hip height. Relax left leg on the mat bending knees slightly for balance if necessary. Hold band with right hand and rest head on left arm. Contract abdominal muscles to align spine, shoulders and hips (A). Inhale to prepare; exhale and straighten right leg, still parallel to mat and then behind as far as possible without rolling (B). Return to the start position on inhale. Repeat 10–15 times, then switch sides and repeat. Lie on back and hug knees to chest to stretch at end of exercise.

A



B



## Inner Thigh Scissors

Lie back, hands at sides, palms down. Raise both legs to a 90-degree angle. Simultaneously pull belly button toward spine and squeeze gluteal muscles tightly. Press lower back into the floor, flex feet and slowly open legs as wide as possible while inhaling (pictured). On exhale, bring legs back together, keeping feet flexed. Do about 20 repetitions.

Modification: Extend legs up a wall to avoid strain to back.





## Chair Chin-up

Put a stick handle across two chairs placed about a metre apart. Lie back between the chairs and grasp the stick handle with palms facing down about shoulder-width apart. Lift chest up to the bar, bringing elbows close to rib cage keeping legs straight. Lower almost to the floor. Repeat five times. Rest 30 seconds and repeat.

**Safety:** Ensure stick handle is secure.



## Front Lunge with Twist

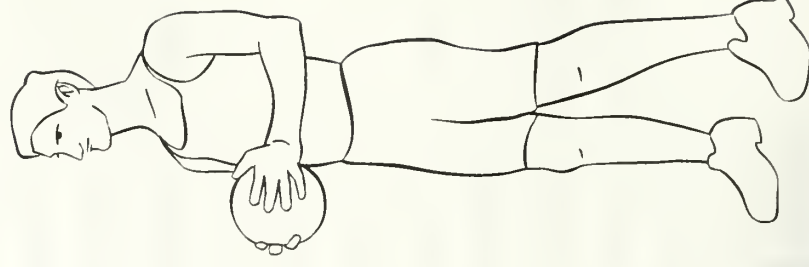
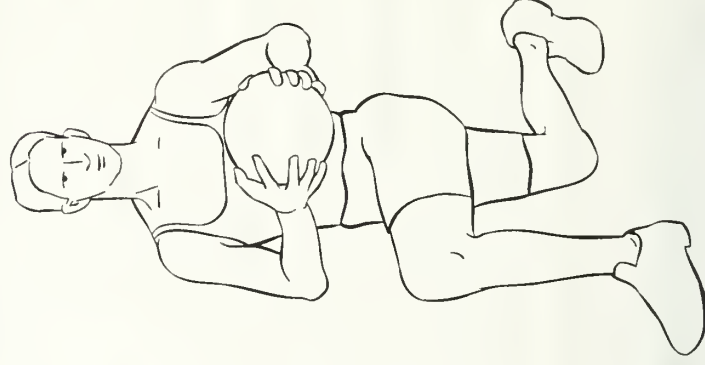
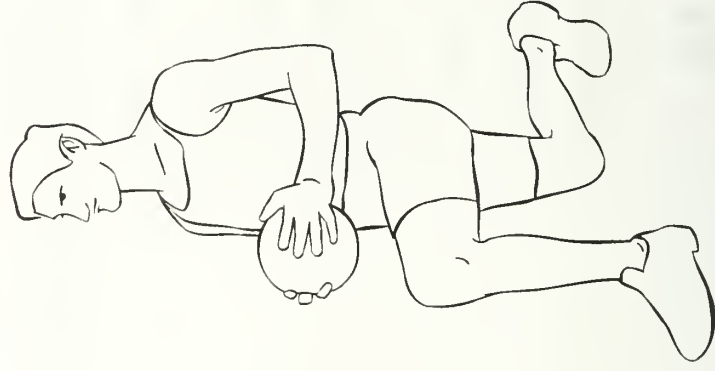
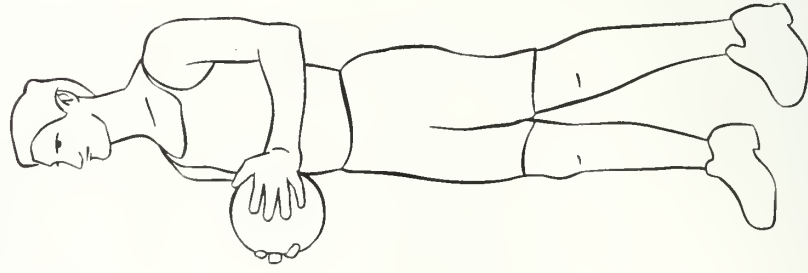
Stand with feet hip-width apart. Hold a medicine ball, or lighter ball, arms extended at chest height. Contract abdominal muscles and draw shoulder blades down and together. Take a large step forward with left foot, bending knees so left knee aligns with ankle and right knee approaches the floor, heel lifted. Hold the lunge and rotate torso with arms still extended, as far as possible to the left without altering alignment. Rotate back to the front, return to starting position and repeat. Do 10–15 repetitions, then switch legs and repeat.



## Medicine Ball Walking Lunge Twist

Keep front of lower leg perpendicular to the floor. Twist to one side then return to face forward. Return to standing position.

Do 10 repetitions of each leg in a one-minute duration. Repeat three times.



## One-arm Side Push-up

Lie on right side with left palm flat on the floor in front of shoulder, elbow bent. Wrap right arm around rib cage and bend knees slightly. Using left arm, push torso up until arm is straight. Lower upper body until shoulder is about 10 cm off the floor. Keep hips and feet planted on the floor and shoulders away from ears. Do 10–15 repetitions. Rest 20–30 seconds. Switch sides.



## Sample Tag Games/Activities

**Benefits Health**

Functional Fitness ✓

Body Image

Well-being

The following activities can be performed in physical education classes. Although other student outcomes may be achieved through these activities, the focus is on Outcome B.

**Safety Considerations for All Activities**

- Keep activities away from walls/nets/poles
- Remind students to be aware of space and others moving into their space.

**Amoeba Tag**

Ask two students to find partners. Ask them to link arms or join hands, whichever they prefer. These two pairs of students start as “IT.”

Establish boundaries for the activity.

Students who are “IT” must try to tag another single student. Once tagged, the third student links arms or joins hands to make a group of three. This group tries to tag another single student. Once they become a four-person amoeba, the amoeba splits into two. This continues until there is one student left or all have been caught.

At the end of the game do a 10-second heart rate count and discuss students’ heart rates. Have students walk slowly around the gym until heart rates are lowered to below 120 beats per minute. Once all students have lowered their heart rates, provide a variety of stretching activities. If using pedometers, record the number of steps each student used during this activity.

**Circle the Wagons**

Ask students to find partners and stand behind each other. Students form two circles.

Appoint one set of partners to stand in the middle of the circle as they pass or volley a ball to each other. Upon the command “UP,” the ball is tossed to the middle of the circle and all the partners on the outside jump into a piggyback format with their partners. They stay there until the teacher gives the command “DOWN.” At this point, the partner jumps off. Continue to give these commands until you decide to “CIRCLE THE WAGONS.”

Once this command is given, all the partners on the outside must run around the outside of the circle in a counter-clockwise direction. Once they return to their partner, they crawl between their partners’ legs to the centre of the circle.



## **Appendix K (continued)**

Once inside, they try to steal the ball being tossed or volleyed that has been left in the centre of the circle. The first pair to get the ball stays in the middle for the next game.

At the end of the game, all students come to the centre of the gym to check heart rates and stretch. Discuss individual differences in heart rates and possible reasons for different heart rates. If using pedometers, note the number of steps taken to record at the end of the class.

### **Loose Caboose**

Ask students to form groups of four or five to form a train with a locomotive and three or four cars made of students with their hands on the hips of the person in front of them. There should be at least three trains for a class of 30. Two additional people are needed to be the “loose caboose” and “switcher.”

The object of the game is for the switcher, armed with a soft vinyl-covered ball, to tag the loose caboose with the ball before the caboose can hook onto the back of a train. If the caboose manages to link up, the locomotive at the front breaks away to become the new loose caboose.

If the switcher tags the caboose, the caboose becomes the new switcher and the old switcher gets a free trip to hook onto the back of any train and release the locomotive as the new caboose. At the end of the game, have students come to the centre of the gym to stretch.

One variation is to play with more than one caboose and switcher.

### **Partner Tag**

Ask students to find partners and lock elbows or hold hands. Each pair stands facing another pair. Label them as pair A and pair B. If the numbers of students are uneven, make teams of three or have three groups of two where A, B and C chase one another.

Establish boundaries for the activity. If a pair runs out of bounds while being chased they are automatically IT.

All the A's start as IT and remain standing. All the B's scatter. Each “A” pair can only chase their “B” team pair by staying connected with their A partner while power walking...no running! Once the B pair is tagged, they must stay connected and spin a complete circle before chasing their A team. This continues for a set time in order to increase heart rates and warm up muscles.

At the end of the game, have students sit in the centre of the gym. This allows for a time to stretch. Check heart-rate monitors or pedometers for fitness benefits and discuss heart-rate zones and intensity.

## Triangle Tag

Ask students to form groups of four.

Three students hold hands in a triangle facing each other. One person in the triangle volunteers to be the target. The fourth person stands outside the triangle as the chaser.

The object of the game is for the chaser to tag the target person who is part of the triangle. The three team members all cooperate to protect the target person by moving and shifting away from the chaser as necessary. The target cannot be tagged on the hands or arms or from a reach across the triangle. They must be tagged on any other part of the body. Change target person and chasers regularly so all have a chance to play each position.

At the end of the game, have students come to the centre of the gym to stretch. Discuss heart rates, pedometer results and how these relate to fitness. Ask students to enter suggestions on how they would modify this tag game in their log books. Have them set goals for increasing their heart rates the next time they play this warm-up game.

## Ultimate Sponge Ball

Divide class into equal teams of four to eight players. Each field/court has two sidelines and two goal lines. Each team begins at their own goal line with one of the teams in control of a sponge ball. When the whistle is blown, each team moves into the court. The object is to move the ball all the way down the playing area and make a successful pass to a teammate behind the opponent's goal line. When this occurs, a point is scored and the ball is dropped. The opposite team can pick up the ball and try to score a point. The game never stops and is played continuously unless the teacher stops the game to rotate teams or take heart rates.

The team in control of the ball must move the ball down field by passing it to each other. The student who catches or has control of the ball cannot run with it, but may pivot. Allow for two steps before a travel violation is called and a change of possession occurs. All other offensive players should be trying to move into an open space. They can move anywhere in the playing area as long as they stay in bounds.

Defensive team must stay at least two arms lengths away from the player with the ball and may NOT grab the ball from the offensive player when in control of the ball. Offensive team loses possession of the ball through an incomplete pass or a pass knocked down by a defensive player. If the ball lands on the ground or outside the sidelines, the ball is automatically turned over to the other team. The defensive team must play person-to-person defense. Have students check their heart rates two or three times throughout the game.

Taken from: <http://www.teachers.net/lessons/posts/2653.html>

Wed Aug 7 08:37:38 PDT 2002 by Abby Galcik [abby\\_galcik@hotmail.com](mailto:abby_galcik@hotmail.com) IUP, Indiana, Pennsylvania (US)

## Wall Ball Chaos Activity

Divide the students into two teams. Ask one team to wear pinnies. One team aligns along the wall as the batting team (team A). The other team is the fielding team (team B). Designate two safe lines at either end of the gym.

Choose one kicker from team A and one pitcher from team B. The pitcher rolls the ball to the kicker who stands at the pre-determined home plate area. When the pitcher rolls the ball, the kicker kicks the ball anywhere in the gym. The ball is played off the roof, walls, basketball hoops or other permanent object in the gym. Team B attempts to catch the ball before it hits the floor or collects the ball after it hits the floor and throws the ball at a runner from team A.

The kicker **MUST** run to the opposite safe line/zone along with anyone else on the batting team who thinks they can get to the safe zone. One batter must remain behind to be the next kicker. If the runners make it to the opposite safe zone, they can wait for another kicker to send them home or run back to the batting end safe zone. Any player who runs out of the safe zone on either side of the court must continue to run. They cannot run back to the safe zone. It does not matter how many players stay at the safe zone as long as the batting team does not run out of kickers. A run is counted each time a runner comes back to the batting end safe zone.

A ball caught in the air must be set directly down on the floor and is an automatic out and an exchange of teams occurs. If any of the team A players are hit by the ball as they run to a safe zone or the fielder catches the kicked ball before it hits the floor, team B exchange places with team A. As team B runs into the batting safe zone, team A runs into the field, picks up the ball and attempts to hit one of the team B players before he or she cross the safe line. If this happens, team A must run to the batting safe zone before team B hits one of them.

This sequence continues until one team is successful at getting all their players in the batting safe zone before getting hit with the ball. The teacher can blow the whistle to indicate the exchange to help with learning the game.

### Variations:

- Eliminate throwing balls at the runner and instead designate a number of passes, e.g., two needed to be made by the fielding team before the ball is passed to a fielder standing in the end zone. If the fielding team player in the end zone catches the ball before the runner arrives back, it is an out and the exchange occurs.
- Allow the fielding team to run with the ball and stipulate an underhand throw from a set distance or a tag to eliminate the runner.

### Wall Soccer/Hockey Activity

Divide the class into two equal teams with each team wearing a different colour of pinny.

The objective of the game is to kick the ball against the opposing team's goal/wall and have the entire team run back to tag the defending wall in order to collect one point.

The goal area is the entire width of the wall below waist height. Each team is allowed as many goalies as they want. There is no goal crease and only goalies may use their hands to block the ball.

Teams play an indoor-soccer-type game, using soccer rules to try and get close enough to kick the ball (below waist height or lower) against the opponent's wall/goal. When the ball hits the wall, the entire offensive team must run back to their defending wall and tag it. No point is scored until all offensive team members have a hand on their wall at the same time. The game is continuous so the opposing team can score at any time during this transition.

Variations:

- Use floor hockey rules with sticks and a ball.
- Use basketball rules and throw the ball at the wall below waist height.



## Principles of Training

Certain types of and amounts of activity are most effective in developing the various components of physical fitness such as:

- cardiovascular endurance
- flexibility
- strength.

To change the capacity of a system in the body requires a change in the amount of work it does. This work done by the body is the basis of physical conditioning and is dependent upon the four variables in the F.I.T.T. Formula:

### The F.I.T.T. Formula Applied to Components of Fitness

Component of Fitness	Cardiovascular	Flexibility	Muscular strength
Frequency	4–7 x week	4–7 x week	2–4 x week
Intensity	Moderate to vigorous	Stretch to feel mild-moderate tension (no pain)	Sets to failure High resistance
Time	20 minutes +	Hold 30–60 seconds	To fatigue
Type	continuous	Static stretch	Type of contraction

The **FITT Formula** outlines the four essential ingredients in the development of each area of fitness. Consider the FITT Formula when planning your physical activity routine. Your FITT Formula should be based on your own personal physical activity goals.

- **Frequency** – How often you are active? Find a routine that will fit with your schedule and stick with it.
- **Intensity** – How hard your activity is. Use a variety of intensities, as well as your perceived level of exertion scale to exercise at a comfortable but challenging level.
- **Time** – How long you are active for. Time is dependent on effort/intensity see Canada's Physical Activity Guide (PAG) recommendations.
- **Type** – The type of activity you choose. Combine a variety of activities in your routine depending on your goals.

PAG Recommends:

Endurance 4–7 days/week

Flexibility 4–7 days/week

Strength 2–4 days/week

Accumulate 30–60 minutes of activity everyday of varying intensities.

### Target Heart-rate Zone

It is important to exercise within the appropriate intensity range to improve cardiovascular fitness and to reduce the likelihood of injury. To calculate this zone, see Target Heart-rate Zone on page 33. After determining a personal target zone, monitor exercise heart rates at intervals throughout each exercise period to maintain this intensity.



## Assessment Tests: Sample for Initial Fitness Level Assessment

### Endurance Assessment

Be sure that students warm-up for at least 5 to 10 minutes before initiating any cardiovascular test that requires activity at a higher intensity.

- 12 minute run: record the distance (laps or km) and/or the average and Max HR rate if available –aerobic measurement.
- 20 metre shuttle run: record what stage or level they reached and heart rate data if available – anaerobic measurement.
- 5 km run: record the time and the average and peak heart rate if available.
- steady state test: run/walk/bike for 15 minutes at an intensity level where you can still comfortably talk; record the distance and average heart rate if available.
- recovery heart rate: 1 min recovery from 5 minutes at a steady state of 75 percent of Max HR; record number of bpm drop in 1 minute.
- Morning Heart Rate: take on a regular basis.
- walk test: any distance; e.g., 2 km; record time and average heart rate if available.
- If students have heart-rate monitors and know their heart rates in the different zones in advance, they could try the “Heart-rate Criss-Cross Test.” Choose two levels of intensity, e.g., 70 percent of Max HR and 85 percent of Max HR. Work out so that you get your heart rate up to 85 percent and down to 70 percent many times as you can in 10 minutes (up and down = 1 time). How many ups and downs can you get in the designated time?

### Flexibility Assessment

Light stretches before an activity will warm up the muscles and longer stretching should occur after the workout. For examples which demonstrate a variety of stretches see:

<http://www.education.gov.ab.ca/PhysicalEducationOnline/TeacherResources/toolbox/files/gtstret.pdf>

- Sit and reach (hip flexibility)
- Touch toes from standing (hip flexibility)
- Touch fingers behind back (shoulder flexibility)

### Strength Assessment

Warm up the muscles initially with activity before beginning assessment and stretch well after the assessment. For examples of strength activities see Appendix J pages 120–145.

Physical Activity Readiness  
Questionnaire - PAR-Q  
(revised 2002)

# PAR-Q & YOU

(A Questionnaire for People Aged 15 to 69)

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Being more active is very safe for most people – however, some people should check with their doctor before they start becoming much more physically active.

If you are planning to become much more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly. Check YES or NO.

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	1. Has your doctor ever said that you have a heart condition <u>and</u> that you should only do physical activity recommended by a doctor?
<input type="checkbox"/>	<input type="checkbox"/>	2. Do you feel pain in your chest when you do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	3. In the past month, have you had chest pain when you were not doing physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	4. Do you lose your balance because of dizziness or do you ever lose consciousness?
<input type="checkbox"/>	<input type="checkbox"/>	5. Do you have a bone or joint problem (for example, back, knee or hip) that could be made worse by a change in your physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
<input type="checkbox"/>	<input type="checkbox"/>	7. Do you know of <u>any other reason</u> why you should not do physical activity?

If  
you  
answered

## YES to one or more questions

Talk with your doctor by phone or in person **BEFORE** you start becoming much more physically active or **BEFORE** you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.

- You may be able to do any activity you want – as long as you start slowly and build up gradually. Or you may need to restrict your activities to those which are safe for you. Talk with your doctor about the kinds of activities you wish to participate in and follow his/her advice.
- Find out which community programs are safe and helpful for you.

## NO to all questions

If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can:

- start becoming much more physically active – begin slowly and build up gradually. This is the safest and easiest way to go.
- take part in a fitness appraisal – this is an excellent way to determine your cardio fitness so that you can plan the best way for you to live actively. It is also highly recommended that you have your blood pressure re-evaluated. If your reading is over 144/94, talk with your doctor before you start becoming much more physically active.

### DELAY BECOMING MUCH MORE ACTIVE:

- If you are not feeling well because of an temporary illness such as a cold or a fever – wait until you feel better, or
- If you are or may be pregnant – talk to your doctor before you start becoming more active.

**PLEASE NOTE:** If your health changes so that you then answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.

**Informers: Use of the PAR-Q:** The Canadian Society for Exercise Physiology, Health Canada, and their agents assume no liability for persons who undertake physical activity, and if in doubt after completing this questionnaire, consult your doctor prior to physical activity.

**No changes permitted. You are encouraged to photocopy the PAR-Q but only if you use the entire form.**

**NOTE:** If the PAR-Q is being given to a person before he or she participates in a physical activity program or a fitness appraisal, this section may be used for legal or administrative purposes.

"I have read, understood and completed this questionnaire. Any questions I had were answered to my full satisfaction."

NAME \_\_\_\_\_

SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

SIGNATURE OF PHYSICIAN \_\_\_\_\_

ADDRESS \_\_\_\_\_

or GUARDIAN (for participants under the age of majority)

**Note: This physical activity clearance is valid for a maximum of 12 months from the date it is completed and becomes invalid if your condition changes so that you would answer YES to any of the seven questions.**



© Canadian Society for Exercise Physiology

Supported by



Health  
Canada

Santé  
Canada

## Career and Life Management (CALM)

General Outcome _____		Specific Outcome _____	
Time Frame _____		Date _____	
<p><b>Activating learning activities</b></p> <p>Ask students to measure their resting heart rates prior to any physical activity and have each student record the number. Then, have students do a particular set of repetitions for a set time using normal conditions, such as:</p> <ul style="list-style-type: none"> <li>• bench steps for two minutes</li> <li>• jumping jacks for one minute</li> <li>• high knee running on the spot for two minutes.</li> </ul> <p>Immediately after the activity, have students measure their heart rates and record them.</p>		<p><b>Content/background information</b></p> <p>Ensure students are aware that tobacco has many dangerous components—cyanide, toluene, nicotine and tar to name a few. This activity focuses on the long-term effects of tobacco use that reduce the capacity of the lungs to take in air and exchange oxygen/carbon-dioxide (O<sub>2</sub>/CO<sub>2</sub>) properly.</p>	
<p><b>Application learning activities</b></p> <p>Cut small-to-medium diameter straws into short lengths for each participating student. Have students place a straw in their mouths and breathe through the straw only, not through their noses. This simulates the restricted airflow of most long-term smokers. Repeat the previous activity for the same time period and have students breathe through the straws only, while participating in a physical activity.</p>		<p><b>Home/School/Community connections</b></p> <p>Ask students to try this activity at home with their parents. Compare students' findings to family findings.</p> <p>Did students find any surprising results?</p> <p>Seek out someone who has asthma or other conditions that affect lung capacity and discuss how vigorous exercise affects him or her.</p>	
<p><b>Extension learning activities</b></p> <p>Discuss how a person's breathing capacity is one factor to consider when being active. Have students summarize why it is important to be aware of personal limitations from a health standpoint and of individual physical capabilities for activities.</p> <p>Measure heart rates immediately after the activity and compare the normal activity heart rate to the simulated long-term smokers' heart rate for the same activity and time. What trend, if any, did they find? Discuss how it felt to breathe through the straw while exercising. What thoughts ran through their minds as breathing became more difficult?</p>		<p><b>Assessment</b></p> <p>Students assess the effects of restricted lung capacity on health</p> <p>Students analyze risk-taking behaviours, such as smoking, as contributors to physical well-being.</p>	
<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Straws of small-to-medium diameters</li> </ul>			

## Career and Life Management (CALM)

General Outcome _____		Specific Outcome _____	
Time Frame _____		Date _____	
<b>Activating learning activities</b>  Discuss the importance of fuelling the body before, during and after physical activity. Include a brainstorming session on what types of food to consume before, during and after competition and/or exercise to help the body work at an optimal level.		<b>Content/background information</b>  Start by discussing nutrition and how it affects a healthy active lifestyle. Nutrition complements physical activity as students pursue a wellness lifestyle. If a student is physically active, he or she will burn more calories so it is important to eat nutritionally and re-hydrate.	
<b>Application learning activities</b> <b>POWER SNACK ASSIGNMENT</b> Divide the class into groups of three or four. Each group is responsible for creating a power snack. Once the snack is created, each group provides a small taste sample of their nutrition snacks for the rest of the class.  The assignment includes the following requirements: <ul style="list-style-type: none"> <li>• a brand name for the power snack</li> <li>• the recipe and a list of ingredients</li> <li>• the amount of fat</li> <li>• the amount of carbohydrates</li> <li>• the amount of protein</li> <li>• the amount of fibre</li> <li>• an explanation and rationale of what makes this snack fuel-efficient</li> <li>• the benefits to using this snack before, during or after physical activity.</li> </ul>		<b>Home/School/Community connections</b>  Ask students to share their snacks at home with their parents and friends. Compare students' comments and feedback with family's and friends' comments. Did students find any surprising results?  Seek out someone who regularly exercises and ask what they eat for fuelling and refuelling. Ask how food affects his or her performance.	
<b>Extension learning activities</b> Have students vote on their favourite snack in the classroom.		<b>Assessment</b> Students describe how individuals have control over physical well-being. Students analyze nutritious choices as contributors to physical well-being.	
<b>Resources</b> <ul style="list-style-type: none"> <li>• Snack sample for class</li> </ul>			



## Career and Life Management (CALM)

General Outcome_____		Specific Outcome_____	
Time Frame_____		Date_____	
<p align="center"><b>Activating learning activities</b></p> <p><b>Part A: Nutrition Challenge</b> Have students ask their family members to record their daily nutritional intake using the “What did you eat today?” worksheet on page 158. The worksheet can be posted on the fridge for easy access. Students will be asked to use the “Daily Nutrition Log” page 159, to record nutritional intake in more detail.</p> <p><b>Part B: Physical Activity Challenge</b> Have students’ family members record their number of activity minutes and non-activity minutes for each day of the week on the “What did you do this week?” worksheet on page 158.  Ask students to use the “Physical Activity Log” page 160, as it will allow them to record more detail of. Students will compare the results of each family member to formulate answers for the assignment.</p>		<p align="center"><b>Content/background information</b></p> <p>In order to determine activity levels and nutritional content, students will be asked, along with their families, to keep a log of the food they consume and the physical activities they usually participate in for one week.</p> <p>The best ways for people to achieve personal functional levels of fitness are:</p> <ul style="list-style-type: none"> <li>• choose activities they enjoy</li> <li>• choose activities that fit with their lifestyle preferences</li> <li>• choose activities that meet the components of fitness, e.g., strength, cardiovascular endurance, flexibility.</li> </ul>	
<p align="center"><b>Application learning activities</b></p> <p>Analyze the data by completing the following.</p> <ul style="list-style-type: none"> <li>◆ Did students feel that they and their families made appropriate food choices in relation to <i>Canada’s Food Guide to Healthy Eating</i>, and for their activity levels? Have them explain their results and how they were or were not appropriate.</li> <li>◆ Have them suggest improvements to food choices. Could these changes be easily made? Would they and their families be willing to make these changes? Why or why not?</li> <li>◆ Have them reflect on recorded activity levels. Were they appropriate in relation to <i>Canada’s Physical Activity Guide to Healthy Active Living</i> <a href="http://www.phac-aspc.gc.ca/guide?">http://www.phac-aspc.gc.ca/guide?</a></li> <li>◆ Have students record how they felt during their activities. (They can use the Personal Intensity Scale sheet, page 41).</li> </ul>		<p align="center"><b>Home/School/Community connections</b></p> <p>After students have analyzed the collected data, discuss the results. Did students find any surprising results? Was the log helpful? Did it increase student and family awareness? Variation: Ask students to complete the following as part of a log book assignment.</p> <ul style="list-style-type: none"> <li>• This assignment was informative or not informative because ...</li> <li>• List suggestions to make this assignment more beneficial to students or their families.</li> </ul>	



### Extension learning activities

- ◆ Have students investigate Canadian Internet sites that provide nutritional information and the caloric breakdown of food. They should try to include the types of foods they and their families eat on a regular basis. They should record the Web sites used (in brackets) at the end of the assignment.
- ◆ *Canada's Guide to Healthy Eating and Physical Activity* does not replace the current *Canada's Food Guide to Healthy Eating* and *Canada's Physical Activity Guide to Healthy Active Living*. It is a combination of important points from both Guides into one document, which promotes the benefits of eating well and being active and helps you make wise choices everyday. For more information, see [http://www.phac-aspc.gc.ca/guide/index\\_e.html](http://www.phac-aspc.gc.ca/guide/index_e.html).
- ◆ Visit <http://www.healthyalberta.com> for help.

*Note: These Web sites are listed as a service only to identify potentially useful ideas for teaching and learning. The responsibility to evaluate these sites rests with the user.*

The final written report should:

- include a title page
- be neatly typed
- include the detailed daily nutrition log
- include the detailed activity log
- include the Personal Intensity Scale with results
- include any other information discovered about lifestyle habits while doing this assignment.

Develop a plan for healthy living. Have students consider the following.

- What activities do they like to do?
- What components of fitness are important in each activity, e.g., flexibility, strength, cardiovascular, endurance, speed, agility?
- What can students do to improve performance at each activity? (Set goals.)
- Consider the information from the Personal Intensity worksheet when planning.
- What is the most significant change they can make to their nutrition plan?
- Are they balancing their meals with foods from all food groups?

### Assessment

Students describe how individuals have control over physical well-being.  
Students analyze nutritious choices as contributors to physical well-being.

### Resources

- What did you eat today? and What did you do this week? page 158.
- Daily Nutrition Log, page 159.
- Physical Activity Log, page 160.
- Personal Intensity Scale, page 41.
- Computer access to Internet.

## What did you eat today?

Choose foods from each food group daily.

Name	Grain Products 5-12 servings per day	Vegetables & Fruit 5-10 servings per day	Milk Products 3-4 servings per day	Meat & Alternatives 2-3 servings per day
Example	✓✓✓✓✓ <small>1 slice of bread, 1/2 cup rice, 1/2 cup pasta, 1/2 cup cereal</small>	✓✓✓✓✓ <small>1 cup of vegetables, 1 cup of fruit, 1/2 cup of nuts, 1/2 cup of seeds</small>	✓✓✓✓✓ <small>1 cup of milk, 1/2 cup of yogurt, 1/2 cup of cheese, 1/2 cup of cottage cheese</small>	✓✓ <small>1/2 cup of meat, 1/2 cup of fish, 1/2 cup of eggs, 1/2 cup of tofu, 1/2 cup of beans</small>

## What did you do this week?

Do 30 minutes of vigorous activity or 60 minutes of light activity every day.

**HEALTHY ACTIVE LIVING**  
Regular physical activity for active living  
Helps you choose a more active lifestyle from these 4 types:  
1. Endurance (4-7 days a week)  
2. Flexibility (4-7 days a week)  
3. Strength (2-4 days a week)

Name	ACTIVE TIME					NON-ACTIVE TIME								
	S	M	T	W	T	F	S	S	M	T	W	T	F	S
Example	15 min.	30 min.	60 min.	15 min.	45 min.			4.0 hrs.	2.0 hrs.	4.0 hrs.	3.0 hrs.	2.0 hrs.	3.0 hrs.	3.0 hrs.

Remember to record your total time each day.

Always satisfy your thirst. Choose water often and be sure to drink more in hot weather or when you are very active. (Source: Health Canada Using the Food Guide 1997)

Children 4-9 yrs: 2-3 hours 10-16 yrs: 3-4 hours 2-3 hours 16-19 yrs: 3-4 hours 20-24 yrs: 3-4 hours 25-34 yrs: 3-4 hours 35-44 yrs: 3-4 hours 45-54 yrs: 3-4 hours 55-64 yrs: 3-4 hours 65-74 yrs: 3-4 hours 75-84 yrs: 3-4 hours 85-94 yrs: 3-4 hours 95-104 yrs: 3-4 hours

<b>Daily Nutrition Log</b>							
Name:		Grade:		Class:			
Date	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Breakfast							
Lunch							
Dinner							
Snacks							
Milk Products 3 - 4							
Grain Products 5 - 12							
Meat and Alternatives 2 - 3							
Vegetables and Fruits 5 - 10							

<b>Physical Activity Log</b>							
Date	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Physical Activity							
Minutes of Activity							
How Hard Did I Work							
How I Felt							

## Career and Life Management (CALM)

General Outcome _____		Specific Outcome _____	
Time Frame _____		Date _____	
<b>Activating learning activities</b> Students research varied fast food restaurants for the amount of fat and calories in their menu choices. Encourage students to choose some of their favourite fast food locations.		<b>Content/background information</b> Fast Food Facts Eating at fast food chains is convenient, but there can be negative consequences to continued consumption of high-fat food choices. Most fast food chains promote overindulgence by advertising that bigger is better.	
<b>Application learning activities</b> Have students collect the pamphlets from at least five different fast food venues and create a chart to indicate the most nutritious food choices at each restaurant.  Have them list the healthiest two or three choices from each venue and indicate the number of calories and amount of fat in each. They should include the name of the fast food restaurants in their compiled lists.		<b>Home/School/Community connections</b> After students have analyzed the collected data, have them share their findings with their families. Did students find any surprising results? Did it increase their own and their families' awareness? Variation: Ask students to complete the following as part of a log book assignment. <ul style="list-style-type: none"> <li>• This assignment was informative or not informative because...</li> <li>• List suggestions to make this assignment more beneficial to students or their families.</li> </ul>	
<b>Extension learning activities</b> Have students analyze the nutritional information of their favourite menu options at a fast food outlet by answering these questions. <ul style="list-style-type: none"> <li>• What did they learn by doing this assignment?</li> <li>• Is this information useful?</li> <li>• Will this assignment make them choose different foods when eating fast food? Why or why not?</li> <li>• How many times on average per week do they eat fast food?</li> <li>• Will they continue to eat fast foods as often? Why or why not?</li> <li>• Include any other relevant comments.</li> </ul> The final written report should: <ul style="list-style-type: none"> <li>– include a title page</li> <li>– include a bibliography of the pamphlets collected stapled to the research report</li> <li>– include a list of Web sites or other resources used</li> <li>– be neatly typed.</li> </ul>		<b>Assessment</b>  Students analyze nutritious choices as contributors to physical well-being. Students demonstrate the effects of eating fast foods.	
		<b>Resources</b> <ul style="list-style-type: none"> <li>• Pamphlets from five fast food places.</li> </ul>	



## Career and Life Management (CALM)

General Outcome _____		Specific Outcome _____	
Time Frame _____		Date _____	
<b>Activating learning activities</b>  Using the Web sites listed in the Content Information section and their own resources have students answer questions 1–17 on a separate sheet of paper.  They should reference their own resources with their answers.	<b>Content/background information</b> <i>Note: These Web sites are listed as a service only to identify potentially useful ideas for teaching and learning. The responsibility to evaluate these sites rests with the user.</i> <a href="http://www.weightlossforall.com">http://www.weightlossforall.com</a> <a href="http://www.weightlossforall.com/metabolism.htm">http://www.weightlossforall.com/metabolism.htm</a> <a href="http://www.weightlossforgood.co.uk/basal_metabolic_rate.htm">http://www.weightlossforgood.co.uk/basal_metabolic_rate.htm</a> <a href="http://motionworksfitness.com/bmr.htm#BMR-F">http://motionworksfitness.com/bmr.htm#BMR-F</a> <a href="http://americanheart.org/presenter.jhtml?identifier=1200000">http://americanheart.org/presenter.jhtml?identifier=1200000</a> <a href="http://www.heartmonitors.com/heart_rate_basics.htm">http://www.heartmonitors.com/heart_rate_basics.htm</a> <a href="http://www.phac-aspc.gc.ca/pau-uap/fitness/pdf/handbook_eng.pdf">http://www.phac-aspc.gc.ca/pau-uap/fitness/pdf/handbook_eng.pdf</a>		
<b>Extension learning activities</b> Have students ask family members to complete question 14–17 and compare the results with their own answers. Discuss the social aspects of life that influence healthy decisions, e.g., few friends interested in activity. Brainstorm other questions that came to mind while completing this assignment.			
<b>Application learning activities</b> <ol style="list-style-type: none"> <li>1. What is metabolism?</li> <li>2. What is basal metabolism?</li> <li>3. List four ways to boost metabolism.</li> <li>4. Calculate your BMI.</li> <li>5. What is the total number of calories that you need per day?</li> <li>6. What exercise burns the most calories per day? The least?</li> <li>7. Give four examples of why it is important to drink water.</li> <li>8. How much water should people drink per day?</li> <li>9. Why should they drink it cold?</li> <li>10. What is aerobic exercise?</li> <li>11. List five examples of aerobic exercise.</li> <li>12. Define resting heart rate. What is your resting heart rate?</li> <li>13. Define target heart rate. What is your target heart rate?</li> </ol> <p>For questions 14–17 use the Public Health Agency of Canada's <i>Physical Activity Guide to Healthy Active Living</i> handbook <a href="http://www.phac-aspc.gc.ca/pau-uap/fitness/pdf/handbook_eng.pdf">http://www.phac-aspc.gc.ca/pau-uap/fitness/pdf/handbook_eng.pdf</a>.</p> <ol style="list-style-type: none"> <li>14. Fill out the Physical Activity Readiness Questionnaire.</li> <li>15. What are some things you can do to become more active every day?</li> <li>16. What are the three fitness categories and briefly describe each one.</li> <li>17. With the information you've gathered from doing this assignment, write a paragraph outlining whether or not you think you're physically fit. Provide reasons and examples.</li> </ol>			

## Appendix O (continued)

### Home/School/Community Connections

In order to complete these questions, students and families should be familiar with the Public Health Agency of Canada's *Physical Activity Guide to Healthy Active Living* handbook, [http://www.phac-aspc.gc.ca/pau-uap/fitness/pdf/handbook\\_eng.pdf](http://www.phac-aspc.gc.ca/pau-uap/fitness/pdf/handbook_eng.pdf)

Resources	Assessment
<ul style="list-style-type: none"><li>• Alberta Centre for Active Living</li><li>• Internet</li><li>• Books or magazines</li><li>• Health or fitness professionals</li></ul>	<p>Students describe how they will control their physical well-being.</p> <p>Students analyze safety/risk-taking behaviours, nutritious choices and physical activities as contributors to physical well-being.</p>

## Glossary

**Active living:** A way of life in which physical activity is valued and integrated into daily living. (Government of Canada, 1992)

**Anaerobic threshold:** The highest intensity that can be sustained for an extended period of time (15–60 minutes)

**Endurance:** The ability of the heart, blood, blood vessels and respiratory system to supply oxygen and necessary fuels to muscles during exercise. Exercises for endurance range from walking and household chores to organized exercise programs and recreational sports.

**Exercise:** A form of leisure-time physical activity that is planned, structured and repetitive. The main objective is to improve or maintain physical fitness.

**Flexibility:** The ability to move easily, keeping the muscles relaxed and joints mobile. Regular flexibility activities can help maintain and improve quality of life and ensure independence as aging occurs. Flexibility activities include gentle reaching, bending and stretching of all muscle groups.

**Functional fitness:** The possession of the necessary fundamental components of fitness—endurance, strength and flexibility—to allow for comfortable and confident participation in a selected physical activity.

**Heart-rate numbers:** The number of heartbeats per minute.

**Maximal heart rate:** The highest number of times the heart can contract in one minute. This can be measured by using a heart-rate monitor and it is sport specific.

**Muscular endurance:** The ability of a muscle to contract over time.

**Outcomes:** Describes the knowledge, skills and attitudes achieved through student learning.

- General Outcomes—broad statements that identify what students are expected to know and be able to do upon completion of a program.
- Specific Outcome—statements that identify the component knowledge, skills and attitudes of a general outcome.

**Physical activity:** All leisure and non-leisure body movement produced by the skeletal muscles resulting in an increase in energy expenditure.

**Physical fitness:** Attributes that are either health related or performance (or skill) related. Health related fitness comprises those components of fitness that exhibit a relationship with health status. Performance/skill-related fitness involves those components of fitness that enable optimal work or sport performance.

**Rate of Perceived Exertion (RPE):** A way of assigning a numerical value based on the perception of effort.

**Recovery heart rate:** The number of beats per minute the heart drops in the first minute after exercise has stopped.

**Resting heart rate:** The reduction in heart rate right after exercise has stopped. The higher the fitness level, the faster the drop in heart rate.

**Strength:** Activities that help muscles and bones stay strong, improve posture and prevent diseases like osteoporosis. Strength activities are those that work muscles against some kind of resistance, like pushing or pulling hard to open a heavy door.



## Further Support Resources

**Note:** These Web sites are listed as a service only to identify potentially useful ideas for teaching and learning. The responsibility to evaluate these sites rests with the user.

Alberta Education. <http://www.education.gov.ab.ca/physicaleducationonline/teacherresources>  
This site provides a wealth of information to support implementation and student learning of the K–12 physical education program of studies. The site is divided into three major sections: Program of Studies, Teacher Resources and Home Education.

American Heart Association. <http://www.americanheart.org>. This site is dedicated to providing information on fighting heart disease and stroke, and offers information on the structure and function of the heart, risk factors of heart disease and tips for maintaining a healthy heart.

Canadian Fitness and Lifestyle Research Institute: <http://cflri.ca/cflri/cflri.html>. This site includes research on physical activity of Canadians over the past 10 years, tips for being active, resources, research projects and news releases. Also included is a “Heart Health Quiz” to help students assess their cardiac risk.

Canada’s Physical Activity Guide: <http://www.phac-aspc.gc.ca/pau-uap/paguide/> (or 1–888–334–9769 to order the guide). This site has a number of guides based on various age groups to help people make wise choices about physical activity.

Dieticians of Canada. <http://www.dietitians.ca>. Includes activities to support understanding of nutrition. Includes a nutrition challenge game, a personal Nutrition Profile, a make-a-meal feature and other interactive activities.

Edmonton 2001 8<sup>th</sup> IAAF World Championships in Athletics: *Our Schools in Action*  
<http://www.education.gov.ab.ca/physicaleducationonline/edmonton2001/posters.asp>. This site has downloadable teacher resources including Run, Jump, Throw posters for circuits.

Gatorade Sports Science Institute. <http://www.gssiweb.com/index.cfm>. This is a sport science site complete with the latest research on nutrition, sport performance, injuries and hydration.

Health Canada. <http://www.hc-sc.gc.ca>. Resources related to heart health include a Healthy Heart Kit and *Canada’s Food Guide to Healthy Eating*, with lots of nutritional information.

Heal the Heart. <http://www.pbs.org/healaheart/index.html>. This site includes information on risk factors for heart disease and how to avoid or prevent these risk factors.

Heart and Stroke Foundation of Canada. <http://ww2.heartandstroke.ca>. Includes the latest research, resources on heart health, a calculator for BMI and waist-to-hip ratio measurement, and various other tools.



Heart Exploration. <http://sln.fi.edu/biosci/heart.html>. An information site on the heart, complete with images. Includes information on the development, structure and function of the heart as well as tips for heart health.

Heart Zones. <http://www.heartzones.com>. Includes information on heart zones training—an approach that utilizes Max heart rate and a five-zones concept to facilitate individualized training. Also includes information about training seminars, training tips, an e-newsletter and list of resources; e.g., wall charts, DVDs, CD-ROMs, books, heart-rate monitors.

Human Kinetics. <http://www.humankinetics.com>. Human Kinetics is a leader in the distribution and publishing of books, journals, software, videos and distance learning in physical activity.

Kids Health. “All about the Heart.” [http://kidshealth.org/kid/body/heart\\_SW.html](http://kidshealth.org/kid/body/heart_SW.html). This information site, written for a youthful audience, includes information about how the heart works.



## Alberta Education Authorized Resources

Allen, Lynn. Physical Activity Ideas for Action/Secondary Level. Champaign, IL Human Kinetics.

Burke, Edmond (Ed.). *Precision Heart Rate Training*. Champaign, IL: Human Kinetics.

Edwards, Sally. 2002. *The Heart Rate Monitor Guidebook to Heart Zone Training*. Sacramento, CA: Heart Zones Publishing.

Kerr, Rob and Edwards, Sally. 2001. *Heart Zones Circuit Training Handbook: Test and Measurement*. Sacramento, CA: Heart Zones Publishing.

Kirkpatrick, Beth & Birnbaum, Burton. 1997. *Lessons From the Heart*. Champaign, IL: Human Kinetics.

Ottawa Heart Beat Youth Committee. 2001. *Feel the Beat, Leader's Manual*. Ottawa, Ontario.

Swaim, Deve & Edwards, Sally. 2002. *Middle School Healthy Hearts in the Zone*. Champaign, IL: Human Kinetics.

Swaim, Deve & Edwards, Sally. 2002. *High School Health Hearts in the Zone*. Champaign, IL: Human Kinetics.

### Other Resources:

Wall Charts: Heart Zone Max Heart Rate <http://www.heartzones.com> LRC# 608896, \$23.20.



